American Engineer

JULY 1952

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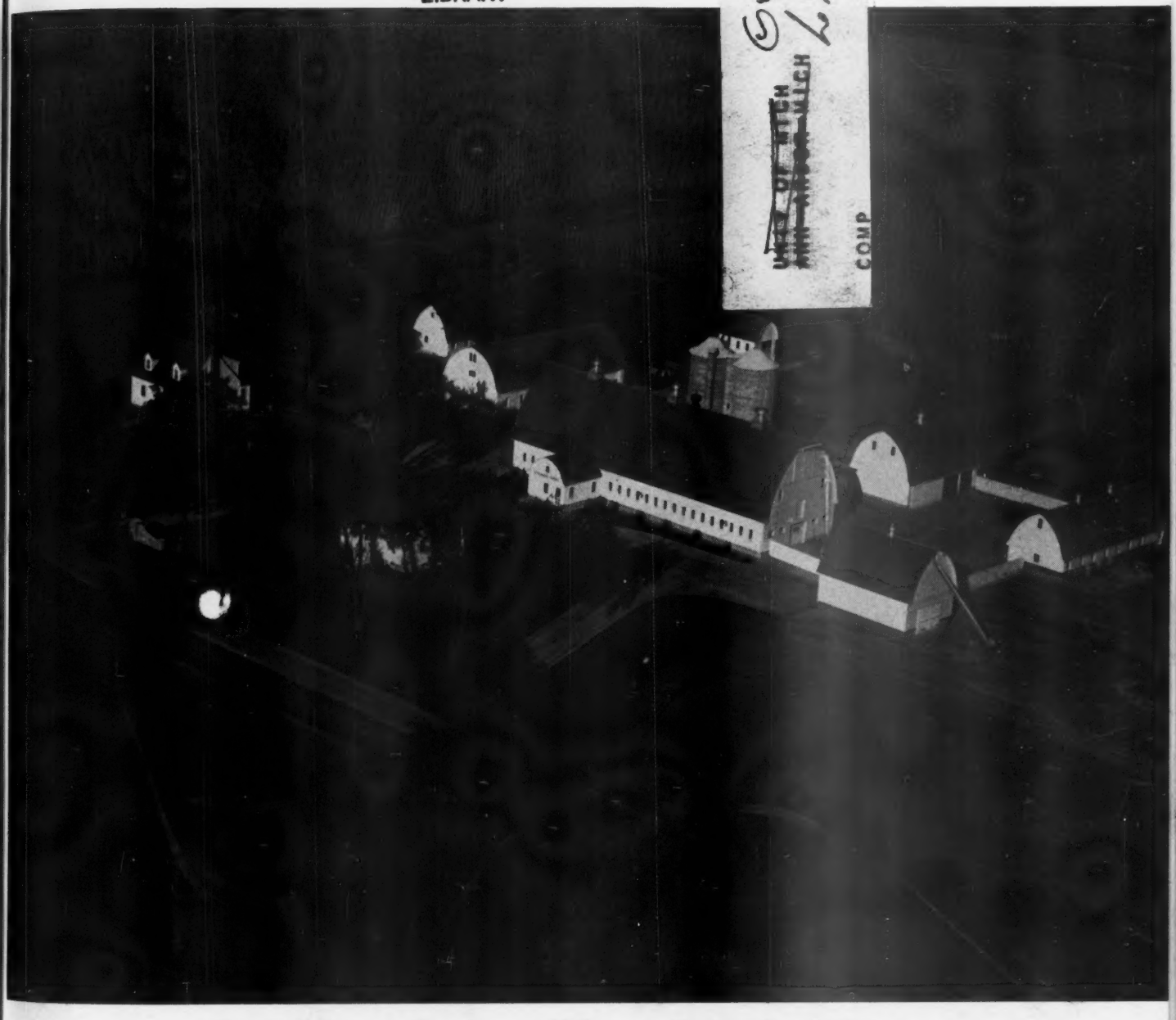

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. . . twelve features of interest to professional engineers

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American Engineer

Letters

Atomic Energy Jobs . . .

Dear Editor:

I was surprised to find upon reading your article in the June issue entitled, "June Graduates Enter A Booming Profession," that the information contained in the original draft of this article concerning the Atomic Energy Commission's vast engineering operations was deleted.

Speaking for our own organization, the Carbide and Carbon Chemicals Company, operating company for the gigantic atomic energy installations at Oak Ridge, Tennessee and Paducah, Kentucky, I would like to point out that we have openings for virtually every specialty in engineering. Especially needed are chemical, electrical, mechanical and metallurgical engineers.

In its atomic energy installations, Carbide has all the problems connected with the maintenance and operations of a national laboratory as well as the plants engaged in production. In addition to these activities, there is design, development and construction relating to the existing installations as well as new projects in the over-all atomic energy program.

I feel that this information should be called to your readers' attention in the interest of presenting a complete story.

DR. JAMES L. GABBARD
Technical Personnel Office
Carbide and Carbon Chemicals Company
Post Office Box P
Oak Ridge, Tennessee

▶ **We are happy to print Dr. Gabbard's letter calling attention to the many opportunities open to the engineer in the atomic energy field.—*Editor.***

Johnston & Pt. 4 . . .

Dear Editor:

I have read with profound interest the excellent article in the June issue of the AMERICAN ENGINEER, written by Eric Johnston, Chairman of the International Development Advisory Board, and I think that our Society should do everything possible to promote the successful development of Point Four in helping cooperative nations to help themselves in the manner set forth in that article.

The AMERICAN ENGINEER is a splendid magazine—it being one of a good number of publications to which I am a subscriber.

ALFRED BROADWATER, P.E.,
Cumberland, Md.

▶ **We wish to thank Reader Broadwater and the many others who wrote concerning the Johnston story. Nearly one hundred readers indicated they would be interested in Point Four work.—*Editor.***

More Pay the Answer . . .

Dear Editor:

Reference is made to the item by Engineer R. N. Barton in the "Professional Postscripts" feature in the June, 1952, issue of the AMERICAN ENGINEER.

In my 50 years of contacts with engineers, I would say that the average engineer in this country is an introvert, but not uncultured.

The reason for this is readily seen and to me quite natural. It originates when the graduated engineer starts working for a salary less than a machinist's helper, and is aggravated when the young engineer marries and tries to raise a family on a salary less than the laborer's pay. He does not get a chance to develop because of worry and overwork.

The remedy for an engineer to grow in stature and to be of full value to his country would be, as I see it, to pay him properly as the man who instructs the laborer in what to do and how to do it, and in addition, give him time to dream, to study, peruse newspapers and magazines, and a chance to acquaint himself with needed developments in his community.

Our AMERICAN ENGINEER is excellent, but could be much better if all registered engineers were able to think as I do—"*Join N.S.P.E. and work for the Society.*" This Society has the right set-up, but if all engineers joined there would be plenty of changes in policy.

O. S. WILLUMSEN, P.E.,
Seattle, Wash.

Time To Go Fishing . . .

Dear Editor:

After practicing his profession for more than a quarter-century, it is most disillusioning for an engineer to learn that he has introduced into his work undue complexities: that, to be brutally frank, he is quite unnecessary. On being acquainted with such facts, the engineer wonders whether he should divulge them to other struggling members of his profession, whether he should quietly fade away, or whether he should unobtrusively commit suicide.

Recently I had occasion to call upon a member of the architectural profession concerning the structural design of a large building. It was a structure to be built by the State, which means that tax money would be used to finance the project. Being a harassed taxpayer, and believing that I could effect major economies in the cost of the structural frame, I had a sincere desire to mitigate the burden on all taxpayers. As so often happens, though, my noble desires were effectively frustrated. But despite the resulting disillusionment, I learned a great deal about structural engineering—many things which had been completely overlooked in my years of practice. Having a slight aversion for suicide, and not wishing to be selfish, I have decided to divulge the valuable information so generously conveyed to me.

For instance, how many engineers realize that a lot of figuring incident to determination of the proper size of a steel beam is merely wasted effort? Are they aware that a 12"-I @ 31.8# is adequate for all loads and all spans? How, they may ask, is that so, since it is in serious conflict with structural theory. The answer is obvious: A 12" I @ 31.8# has never failed. If such a beam has never failed, why isn't it a safe one to use? I submit that such reasoning is absolutely irrefutable and usually emanates from one blessed with the most Socratic propaedeutics.

When it comes to concrete, we should proceed with caution, for it is a material which probably is not here to stay. It has not proved itself. In some particular places, however, it has a peculiar—perhaps a convenient—adaptability. These places usually are cantilever retaining walls. But even here there is no need to "design" such walls. You simply make the footing width about .4 of the wall height. Then you place ½ round bars 6" o.c. in the tension face, letting one-half of them extend to the top of the wall, the other one-half stopping at mid-height. As to the wall thickness, 8" at

(*Continued on page* 30)

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American Engineer

JULY
1952

"Don't be content with doing your duty. Do more than your duty. It is the horse that finishes a neck ahead that wins the race."

—Andrew Carnegie

Kenneth E. Trombley,
Editor

•

David A. Heller,
Staff Writer

•

Arthur F. Beck,
Business Manager

•

George J. Nicastro,
Chairman, Publications
Committee, NSPE

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AN *American Engineer* SPECIAL REPORT

Re: The Events Leading to the Exemption of Professional Engineers from Salary Controls

● **All professional engineers** employed in a professional capacity will be exempt from salary controls as of July 1, 1952 under the terms of final Congressional action on legislation to extend the Defense Production Act.

This important development came in the closing days of the Congress and represents the culmination of a drive started and carried through by NSPE.

As was pointed out on the floor of the Senate, NSPE made the only appearance before the committee on behalf of professional engineers and outlined the effect of salary controls on the profession, and particularly on engineering firms, urging an amendment to place professional engineers on the same basis as that accorded doctors and lawyers.

Following the hearings, the Senate committee reported a bill to extend the Defense Production Act for eight months, with a provision which is summarized in the following extract from the committee report:

● **"The provision of section 103** exempting professional engineers, certified public accountants, and architects from wage and salary stabilization was included in order to place these professional persons on the same basis as doctors and lawyers who were granted an exemption last year. Although the Salary Stabilization Board has authority to grant exemptions to these groups of professionals, in response to your committee's request to do so last year the Board responded that it has not felt that employment conditions have been such as to warrant administrative action. It is your committee's judgment that it is only fair and equitable that engineers as well as certified public accountants and architects who are in private practice on a consultant fee basis should have for their employees the same advantage as physicians and lawyers.

"The exemption is not qualified by the use of the word "licensed" inasmuch as practices vary from State to State with respect to recognition of what constitutes a professional employment, and which govern within the different States."

● **When the bill reached the Senate floor,** Senator Blair Moody, (D., Mich.), objected to removing part of the profession from salary controls, contending it would permit consulting engineering firms to "pirate" from industry.

Senator John W. Bricker, (R., Ohio), sponsor of the original committee action, countered that the opposite situation existed; namely, that private engineering firms are losing their engineers to industry because industrial firms have a wider range of classifications for engineering positions and can place the newly-hired engineer in a higher classification to justify the increased pay.

The Ohio Senator also pointed to the necessity of encouraging engineering students, stating that the amendment would encourage students to take engineering ". . . because they will know if they obtain a good education and properly prepare themselves they will get their just rewards either in industry or in private engineering firms.

He quoted extensively from the NSPE testimony in support of his arguments, objecting to assertions that the committee had not adequately studied the proposal on engineers. In reply to Senator Moody, he stated, "The Senator from Michigan is entirely mistaken. There is testimony in the Record. Either the Senator from Michigan was not at the hearings or he has not read that testimony, for in the hearings there are four full pages of testimony which was given by the Executive Director of the National Society of Professional Engineers."

● **When other Senators also expressed the fear that exemption** for engineers in consulting firms only would aggravate the engineering manpower situation, Senator Bricker stated his preference for removing salary controls for all professional engineers and offered an amendment to accomplish this purpose. The Bricker amendment carried by a voice vote and remained in the bill as finally passed by the Senate.

The legislation passed by the House did not contain any provision concerning lifting of salary controls for professional engineers and the question was thus presented to the conferees of the two houses. Just before the question went to conference, certain government officials brought pressure to bear to have the engineer exemption killed. NSPE advised the conferees, however, that the statements of the government officials were completely unjustified and presented arguments in favor of retaining the Senate provision. This view prevailed and the conferees adopted the Senate language without any change or comment.

Both houses of Congress quickly adopted the conference report and now only the President's signature is needed for the finishing touch. The President actually has little choice but to sign the legislation even though the administration has many objections. Otherwise, there will be no controls on price, wages, or otherwise, as the Defense Production Act expired midnight June 30, 1952.

● **The Salary Stabilization Board** must now develop regulations for determining who is a "professional engineer" and what work is in a "professional capacity." Another provision of the legislation refers to the definitions in the regulations under the Fair Labor Standards Act with reference to professional employees and others and this will most likely be the guidepost used by SSB in determining professional qualifications and work of a professional nature.

Professional News in Capsule Form

Eric Johnston Accepts NSPE Invitation to Speak at Centennial of Engineering • Professional Engineers Are Best Defense Bond Buyers • Items of Interest

Eric Johnston, Chairman of the International Development Advisory Board, (Point 4) has given NSPE President L. L. Dresser a definite acceptance on the invitation offered to speak at the NSPE dinner meeting September 5 in connection with the Centennial of Engineering.

In addition to having held important positions in business and government (President of the United States Chamber of Commerce, Price Stabilization Director, President of the Motion Picture Association) Mr. Johnston is probably one of the nation's most dynamic speakers.

* * *

Another Point 4 development of interest to AMERICAN ENGINEER *readers. The President has named Stanley Andrews to be Administrator of the Technical Cooperation Administration. Mr. Andrews succeeds the late Dr. Henry G. Bennett, who died in an airplane crash last December 22. Mr. Andrews is from Arkansas and is an expert on agricultural matters.*

* * *

Dr. Harold M. Dudley of the American Council of Commercial Laboratories advises that a new directory of members of his society of commercial testing laboratories is now off the presses and is available, free, to interested readers of the *American Engineer*. Write Dr. Dudley at 4302 East-West Highway, Washington 14, D. C.

* * *

DeForest A. Matteson, jr., has been named Associate Technical Editor with the American Society of Civil Engineers. He is a graduate of Carnegie Tech and was formerly a Technical Trainee with Bethlehem Steel. He is an affiliate of the Pittsburgh Chapter.

* * *

Britain must train more scientists and engineers if she is to pay her way and discharge her obligations as a great power, a recent annual report of the government's Advisory Council on Scientific Policy says.

The Council's Committee on Scientific Manpower declared that unless productivity improved Britain could not hold her own in world markets against increasingly efficient competitors. The report called for more scientists and engineers in industry—"men who know how to apply the latest results of scientific research into practical problems of production."

* * *

Engineers are the best purchasers of defense bonds of any professional group, points out Ritchie Lawrie, Jr., past President of NSPE. Mr. Lawrie's opinion is not based on professional pride, but on an official report of the United States Treasury Department. The report, based on a direct mail campaign among virtually all professional groups, noted far more response among members of NSPE than among any other professional group.

Results were: NSPE 6.06% response. Second was the American Hospital Association with 4.73%. The professional architects were third with 3.56%. The American Dental Association was fourth with 3.53%. Doctors, accountants, and other groups trailed behind.

* * *

The Convocation of the Centennial of Engineering in Chicago, September 3-13, will have delegates from all over the world. Latest to send word to General Manager Frank Edwards (an NSPE member) that they will come are two delegations from the Nationalist Chinese Government on Formosa. One will represent the Chiang Kai-shek Ministry of Economic Affairs, the second, the Chinese Institute of Engineers.

150 delegates will come from South America. One of the most spectacular aspects of the celebration will be a stage presentation, "Adam to Atom." The show will trace the contributions of the engineer from the time of the caveman to the present.

* * *

The June 9 issue of *Chemical and Engineering News* contains a pix of NSPE Executive Director Paul H. Robbins testifying before a Senate Armed Forces subcommittee on the Armed Forces Reserve Bill. Both Societies urged the lawmakers to require the armed forces to observe care in the recalling of reservists to avoid squandering America's precious supply of professional and technical manpower. See page 29 for NSPE's full testimony.

* * *

The President has just signed the extension of the Defense Production Act. This legislation frees all professional engineers employed in a professional capacity from further salary controls. For full story see Special Report in this issue.

Worth noting — following statement by Senator Ralph E. Flanders of Vermont, during Senate debate on PE exemption: "I should like to say a word about the peculiar characteristics of the engineer as compared with the best technical worker in the shop. The professional engineer does not simply perform a routine duty, no matter how well it must be done. He is a creative person, and we cannot apply salary controls to such a man."

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The corn picker—another tribute to engineering genius.

More Progress Has Been Made in Agriculture in the Last 25 Years than in All Previous Recorded Time. Much of This Progress Has Been the Result of The Work of Professional Engineers.

FILLING AMERICA'S FOOD BASKET

By VERNON H. BAKER, P.E.,
Research Associate Professor, Va. Polytechnic Institute,
Member Virginia SPE and NSPE

At the beginning of our nation's history, it took the labor of more than five farm people to grow enough food to support a single person living in town. Today, one farmer can grow enough food to sustain life for sixteen city people.

This simple fact, unadorned, explains volumes about the progress of our art, culture, history and civilization.

The engineer, more than any other single person, has been responsible for this astounding revolution in our way of life. The application of engineering to agriculture has grown to be a separate science within the last quarter century.

What about this new science? What does it do? How does it operate?

In response to an invitation from the editor of the AMERICAN ENGINEER, I will try to set forth some of the problems and areas of activity of the agricultural engineer. It is a fascinating story, worthy of American ingenuity at its best, for agricultural engineering has prospered here as in no other nation in the world.

Agriculture in the United States is in a fast moving revolution. Modern farming is now changing from a way of life and has joined the industrial class. It has been said that more progress has been made in Agriculture in the past twenty-five years than in all previous time. Engineers have had a great part in this progress.

One important difference between agricultural engineers and engineers of other specialties is that the agricultural engineer requires a knowledge of biologic processes in addition to a knowledge of mathematics and the physical sciences. The American Society of Agricultural Engineers stresses this in defining what an agricultural engineer is and what he does.

Agricultural engineering is the application of any and all branches of engineering to the extent that they may be used in farming, rural living, processing of farm products, and such allied activities as malaria control and wild-life conservation. It draws largely on mechanical, electrical, structural, civil, and hydraulic engineering.

Though agriculture is the oldest of the industries, agricultural engineering is one of the later branches of engineering to be recognized as such. In theory, at least, agricultural engineering began as long ago as the first crude plow with which primitive man tried to till a seedbed. But it remained for the newer states of a young nation to give it a name and a place in their educational system. The state colleges of agriculture and mechanic arts in Iowa and Nebraska were first to set up courses by that name. The American Society of Agricultural Engineers (ASAE) had its origin in December, 1907.

AGRICULTURAL engineering is developing rapidly as a recognized field of professional engineering and no less than 17 state boards of engineering examiners recognize it in granting registration as a professional engineer. Fifteen Agricultural Engineering departments have been accredited by the Engineering Council for Professional Development.

The ASAE lists five broad objectives of agricultural engineering: the economic betterment of farmers, pri-

marily by reduction of farm production costs, raising the standards of rural living, improving the conservation and management of agricultural resources, enhancing the security and quality of the nation's food and fiber supply, and making the farm a greater market for industrial products and a greater source of industrial materials.

Agricultural engineering is generally divided into several broad categories: the design and development of farm power and machinery, the design and construction of farm structures, rural electrification, soil and water conservation and rural industries and services.

There is an interesting story behind each of these areas, and we will briefly look at some of the things engineers do and some of the things that need to be done in each.

Soil and Water Control and Conservation is mainly the engineering of water management. It is the branch of agricultural engineering which draws most freely on hydraulic engineering with close cooperation with agronomist, foresters, and metorologist.

American farmers have exploited practically all of the available virgin soil. Up until the last two generations, when a farmer "wore out" one plot of ground, he moved up to "new ground." Erosion from improper land use has virtually ruined for further cultivation approximately 50 million acres of United States crop land, and has left another 50 million acres severely damaged. More than half of the top soil already is gone from 100 million acres. There is only about 75 million acres in the country that is not subject to erosion; this includes land now in crops, pastures, and woodland.

The soil is like a bank. The American people cannot continue to be prosperous by removing crops from the soil without putting something back into it. Our checking account will be overdrawn in a few generations if the scientists in engineering research do not concentrate more on soil conservation and develop new and inexpensive fertilizers to replace the depleted elements in the soil.

Agricultural Engineers are now making intense investigations on how to prevent splash, sheet and gully erosion; however, there are many other problems that need to be solved. Such problems as the detachability and transportability of certain soils need to be studied further and recommendations made on preventative measures. New and inexpensive soil erosion prevention structures need to be designed. There is a great need for new machinery for placing drainage tile, a durable and economical drainage tile, and a new and dependable mole plow for draining wet land. The proper depth and spacing of drainage tile needs to be determined for various soils.

ENGINEERING research workers are now investigating some of the problems confronting farmers who are trying to increase production by irrigation. Some of these problems are: to determine the optimum soil moisture percentage for a particular plant; to determine when irrigation is complete for a particular crop; to what extent should an irrigated crop be cultivated; and to develop new sprinklers that will apply water uniformly.

Farm Power and Machinery—Farm power generally means tractors. The prime mover on the farm, and perhaps the greatest engineering contribution to agriculture, is the tractor. Undoubtedly the most important farm machine, the tractor made its initial appearance in the 1870's with a steam-powered variety in England. Big, cumbersome, and awkward, the steamers nevertheless filled an important role in farming as a substitute for human and animal power. Steam tractors lingered on until about 1925.

The coming of the automobile brought with it the gasoline-powered tractor as a kind of corollary. By the time of World War I, the gas-powered tractor was firmly established on America's farms.

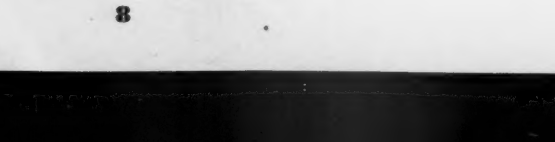
Even if a farmer has the best land in the country and plenty of water and rainfall, he cannot produce enough raw materials to feed and clothe our people and others abroad unless he has adequate machinery.

Power is useless without a means to apply it, and a machine is useless without power to make it run. Power and machinery are so closely related that it is practical to group them together. As used by agricultural engineers, power is any source of energy other than muscles. Farm power and machinery must generally operate under the most adverse conditions of weather, dirt, overload, etc. In general, power and machinery are the products of the farm equipment industry. Plows (harros), seeders, planters, cultivators, haying machines, all kinds of harvesting machinery, and many processing machines such as the silage cutter, feed grinder, combine, cotton gin, etc. are included.

Many farm equipment problems remain unsolved. Some of the equipment in the power and machinery field that should be developed or perfected are: bean harvesting equipment, vacuum harvester for small seeds, low capacity chemical spray for weeds and insecticides, a further mechanization of sugar beet production, mechanical tree-planter, tillage equipment, liquid and gaseous fertilizer placement machinery, peanut harvesting and drying equipment, and the development of equipment for the mechanization of tobacco and cotton. Some excellent work has been done on the above equipment by engineers in industry and state institutions, but a more vigorous program needs to be carried out in order to develop this equipment to the highest operating efficiency with the lowest possible cost to the farmer.

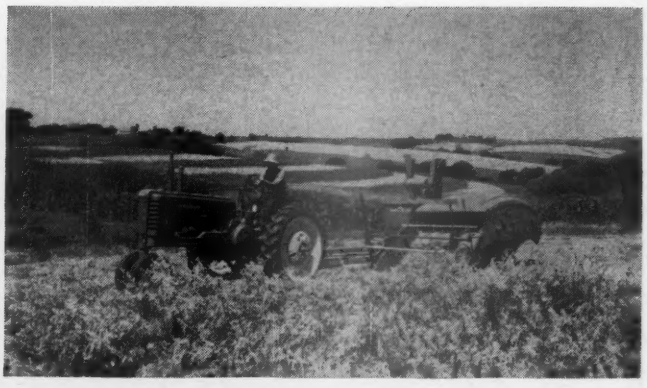
Farm Structures—Engineering research and development can contribute as much to the farm building and rural housing program as it can to most any of the other phases of agriculture. The farmer must have adequate, economical buildings for his livestock, machinery and crops. Farm structures embrace all buildings and most other stationary improvements of the farm, ranging from fences through barns and other animal shelters, silos and granaries and other storages, machine sheds and shops and even the farm dwelling. Agricultural engineering concerns itself mainly with the functional and economic aspects of structures, yet cooperates with the kindred specialty of rural architecture.

Few phases of engineering call for such vision and imagination together with diverse technology and keen economic judgment. Buildings are long-lived, long-term investments, yet they must be planned for the advancing art of agriculture and the changing personalities of successive



Farm Structures

Soil & Water Conservation



Upper left corner. Two-Row, Self-Propelled Cotton Picker does the work of 70 or more hand pickers and more than twice the work of one-row machines.

Upper right corner. Combine here is shown combining a field of down and tangled oats. This is an example to show how farm machinery must be well engineered to do a satisfactory job on the farm. Note the crops planted on the contour in the background.

Lower left corner. Engineering students at VPI study the design of a tractor.

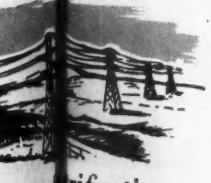
Lower right corner. A close-up view of a mechanical onion harvester developed by engineers at the California Agricultural Experiment Station.

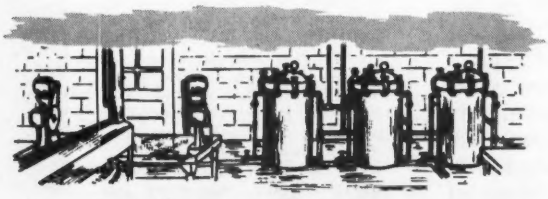
farm operators. No other division of agricultural engineering deals with such elusive factors of time and effort as the influence of building design and farmstead layout on the daily care of livestock which the farmer calls chores.

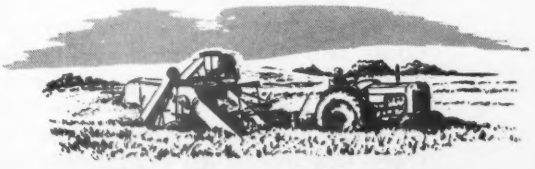
FARM structures engineering calls for full knowledge of climate, the heat and moisture production of animals as well as their environmental needs; the technology of ventilation, heating and insulation; physical and biological behavior of crops in storage; familiarity with equipment as well as conveying equipment for water supply, drainage and electric service, and the "furniture" for everything from pigs to poultry. With the possible exception of soil conservation, no other phase of agricultural engineering offers so great a challenge of great work long overdue as does the rundown, largely obsolete structural equipment of American farms. Research is being conducted in order to formulate functional location plans for farm buildings in relation to each other on different types of farms, as well as developing plans for remodeling existing buildings. Some time and motion studies are being made in order to locate buildings so that the farmer's time will be more fully utilized in performing his chores. Functional designs for all types of farm building need to be worked out. Some farm buildings have too much material in them than would be necessary for the basic needs. The average farmer has more money invested in buildings than in machinery, and it seems logical that as much engineering and planning should go into developing farm building plans as machinery. Up until now the basic building material on the farm has been wood. New economical building materials must be developed because the supply of lumber is becoming limited. Research workers should investigate further the possibilities of utilizing farm wastes in new building materials.

Rural Electrification—Rural electrification deals with all uses and applications of electricity in rural conditions. It includes residential uses, which may be similar to those of city homes, but which extend further to such things as water supply. The vital thing in rural electrification is use of electric energy for doing farm jobs of many kinds. It is not so much electrical engineering as taking advantage of the flexibility, convenience, and automatic control of electric power, heat, and light for purely agricultural purposes.

Examples include electric-heated brooders for young pigs and poultry; electric blowers for cooling and curing grain and hay; ordinary and ultra-violet lighting to in-







rification *Industries & Services* *Farm Power & Machinery*

Electricity is now available to practically every farm in the United States. With plenty of light on this farm, farming operations can be continued on into the night.

crease egg production and promote the health of flocks; electric fences. It includes milk cooling, farm freezers, and other forms of refrigeration.

UNTIL recently the biggest emphasis on rural electrification has been social in character, i.e., improvement of living standards in rural areas. Now that electricity is available to most people in rural areas, there seems to be an unlimited number of ways in which electricity can be put to use in agriculture. Farmers have barely started to exploit the profitable uses of electricity that are available to them. Research workers in engineering can solve the problems encountered in electrically operated farm equipment by determining functional designs for and carrying out basic and fundamental research on the most important equipment. Some of the pressing problems in rural electrification that intensive research can probably solve are: determining the basic requirements of equipment and conditions in drying farm products such as hay, seed, grain, forage, and fiber; determining the functional requirements of farm refrigeration; developing an automatic ear corn feeding and grinding device; investigating the use of the heat pump as a source of heat for heating and cooling farm buildings; and others too numerous to mention.

Processing of Agricultural Products—Agriculture and the farmer can benefit greatly by problems that can be solved by engineering research in the processing field. Practically all of the materials that are produced on the farm are processed by some method before they reach the consumer. In many ways the processing field ties in with the other phases of agricultural engineering already mentioned. If new uses can be found for farm products by developing new processing or improving old procedures, the farmer as well as the consumer will be benefited. Some of the general things that engineering research in the processing field can accomplish are: develop new and better dairy processing equipment in order to get higher quality products; find new uses for farm by-products; and develop safe and economical equipment for processing farm crops into feed; food dehydration and many forms of processing. Any improvement in processing equipment in the food or textile industry will ultimately benefit agriculture.

New Horizons:—The engineer working with the physicists can investigate the unlimited potential uses of atomic energy in agriculture. New material, devices, and techniques need to be developed for applying existing atomic knowledge. Radio-active tracer elements may prove valuable in identifying, tracing, and measuring physical as well as biological forces. Some physicists conceive the idea that research in atomic application may considerably broaden the field of visual analysis of soil and water relationship, mechanical motions, structural design, and electric effects.

It would be impossible to list here all of the agricultural problems that engineers have solved or the problems that future research and development could probably solve. Scientists and technicians from many fields will take part in this great work. The engineer will play a great role in the advancement of agriculture.

About the Author . . .

MR. BAKER

Vernon H. Baker, P. E., is Associate Professor of Agricultural Engineering, Virginia Polytechnic Institute. He worked his way through Tennessee receiving BS in EE under the cooperative plan. After serving 2 years as an officer in the Navy he returned to the Fulton Sylphon Co., Knoxville, Tenn., where he was Asst. Project Engineer. From here he re-entered Tennessee and received the BSAE, and later his MS from Michigan State College.

He is interested in writing and is author or co-author of more than 20 technical, and popular, articles on the application of electricity to agriculture and the processing of agricultural products. He is author of *The Farm Electrical Equipment Handbook*, published by The Edison Electric Institute in 1950.

He is a member of ASAE, AIEE, Va. SPE, and NSPE and the Volunteer Naval Research Reserve.

The Nation's Capitol while undergoing recent repairs.

Straight Thinking–An Election Year Must

By FREDERICK KRAISSL, JR., P. E.
Member New Jersey SPE and NSPE

This Month of Political Conventions in This Year of Choosing Leaders, Offers the Professional Man An Opportunity for Reflection

One of the compensations of the experience that accompanies the passage of time is the ability to view matters in their proper perspective. Consequently, when I find that it is my considered judgment that at no time in the history of our country has it been in greater need of the steadfast support of those who believe in its principles, I can give assurance that this is not based on youthful exuberance, as I am a veteran of both World War I and World War II.

Patriotism does not necessarily mean waving a flag or donning a uniform although many of us have deemed it an honor to have worn the uniform.

Patriotism means straightening out our thinking so that our every action is designed to support the principles on which this country was founded and conversely avoiding any action which gives support to detractors of these principles or thwarts the efforts of those charged with the administration of procedures based on them.

Patriotism means asking ourselves what role we intend to occupy as related to our country.

There are only two possible patriotic alternatives. We may elect a career in government, either seeking an elective office by procedures available to us all or we may seek an appointive or civil service office or military assignment. All of these can lead to a successful and patriotic career in government. The second alternative is to earn our living outside of government but regard ourselves as loyal stockholders in the biggest and best corporation in the world and make government a patriotic hobby. This line of activity is by no means thankless as the knowledge that we are making a patriotic contribution is very rewarding.

The reason for the urgency stressed at the beginning of this discussion is easily explained. For one reason or another detractors of our form of government have been supplied with ammunition by the apparent mass exposures of the frailities of many of our public officials. The most patriotic contribution which could be immediately made will be the restoration of complete confidence in the integrity of public office holders. No one is going to get too disturbed if someone occasionally is charged with poor judgment. Even many of the stars of the major leagues do not bat very much over .300. But we must know that the mistakes are honest and that the batting average is high.

Right now honesty must be the preeminent consideration and where will we find it? All scientists that are true to their calling must be honest by training. Science is classified knowledge. Knowledge leads to truth and truth to honesty. But of all physical scientists, engineers as a class have committed themselves to apply their training

Engineers have committed themselves to apply their training for the benefit of all.

for the benefit of the human race. Consequently while this appeal can be answered by all scientists, engineers have a priority mandate to accept this challenge in our country's hour of need.

We have frequently heard stressed that we need men of high character in public office. What is character? It is merely the sum of our past experiences. If you could look into a man's secret as well as his public record, you would have a good index of his character.

Motive is very important in appraising character. Those whose predominant consideration is what they personally get out of a deal when accepting an assignment in public life would probably waver and fail under circumstances where an individual whose major interest was to serve his country, would stand firm.

It will be evident that the individual who intends to make a patriotic career in government must put the interests of his country before his own. If the pay is not quite so high as he can demand in private life after he has achieved prominence, he must accept this as part of the way of life he has chosen.

Certainly there is no harm in directing administrative attention to the facts of life, but the post of duty should not be deserted for personal advantage. Example is more important than words and the example of many an oldster has had a disastrous effect on the career of many a youngster. It is ridiculous to state that we are not getting good men in public life because we do not pay them enough. We simply have not stressed either by word or action that the primary consideration must be high character. Let us set up our job descriptions with this at the head of the list and we might be surprised at the number of patriots both young and old who would be willing and able to qualify. The clergy have never been notoriously overpaid and they are usually men of unimpeachable character.

Officers of the military services who make this a career are usually men of high patriotic attributes and are also not overpaid. So it is certainly not a matter of compensation, but of getting our values straightened out and setting up traditions.

The great majority of us who propose to earn our living in the rough and tumble of private life must turn to our patriotic hobby of taking an interest in government both for the purifying effect which it has on our own character as well as the strong support which it gives to honest career government officials. Let us examine this statement more closely.

Mr. W. E. Wickenden in his wonderful address before a group of engineers stressed the Doctrine of the Second Mile. Taking a quotation from the Sermon on the Mount and applying the doctrine to our daily life, he stressed the fact that the First Mile was a man's effort to earn the daily bread and meet the requirements of his dependents. The Second Mile was what a man did for his fellow man without thought of praise, advancement or compensation.

Effort devoted in the sphere of the Second Mile has a purifying effect on the character of the devotee and is not this unselfish and capable effort much needed in the field of government?

Government is a loosely applied term. When a country is founded on self government, the term originates on a very modest basis. Everyone by this time must know that very little can be accomplished except through organization. So let us begin to get our experience by taking an interest in county chapter affairs with brother engineers. As we get more experience, we can assume a part in municipal, state and perhaps national affairs, depending upon our developed capabilities and the support we can obtain for our beliefs and ideas.

Political parties are our means of obtaining the type of administration we most favor, and a means by which government career men can obtain the office they wish to fill. On a collective basis the career man is applying to the rest of us for a job and we should take the time and trouble to evaluate his qualifications.

Political parties change their position and their plat-

forms. We have demonstrated that the two major party system is the best for our country and the most stable. We should and must select the party standing for the principles in which we believe. We should support candidates within the party in primary elections who have demonstrated the best qualifications. Many people pride themselves on being independents. Since we know that the two party system is our means for nominating candidates, an independent is merely a shirker of this opportunity and responsibility.

But let us beware of party labels over too long a period and be sure that our present choice represents our basic principles. Let us remember that prior to the War between the States, the then Democratic Party was the champion of States Rights and the old Republican Party was demanding a strong form of centralized government.

Now the present Democratic Party is demanding a stronger form of centralized control than the old Republican Party, and the championship of States Rights rests with the Republican Party and the Southern States.

So let us conscientiously evaluate our convictions and take an active and fearless part in the affairs of the political party that best represents them.

PERHAPS I have had some unusual opportunities. I have stood in the Alamo and know the story of James Bowie and those who fought with him. I have lived in Washington, D. C. and on more than one occasion visited Mount Vernon. I have stood before the tiny cottage which was the birthplace of Lincoln. I have lived in New Orleans and absorbed its traditions. I have spent hours in the oldest house of the oldest city in the United States. But of all similar experiences the greatest impression was made upon me by my visit to restored Williamsburg, Virginia. Standing in the Hall of Burgesses, I could almost hear Patrick Henry make his famous speech at a time when from the personal standpoint, he had much to lose. There is where Constitutional Government was really born and probably why I hold it in such high esteem.

But the common denominator which emerges from this background is that these leaders of nearly two hundred years ago differed from many current leaders by the fact that their greatest concern was what they could do to advance the interests of their country rather than what the country could do to advance their interests.

This was more a matter of point of view than of altruism. To these older leaders they were dealing with the problems and interests of their country. It was their country like a new householder regards *his* house or a new mother regards *her* baby. It was their country. They had cut it out from the wilderness and defended it against the Indians. God help those who tried to take it away from them!

IT is mandatory that we recapture this spirit. I recommend a trip to Williamsburg to those who are lukewarm. But in any event we must get the personal angle that this country is ours, which we have inherited; that we propose to be worthy beneficiaries, and look after our property. Absentee management has produced some undesirable results. We must re-examine the record of the career government managers whom we have employed and decide whether they are handling their jobs to our satisfaction, and whether the policies they have pursued are good for the continued health and well-being of our property.

This is practical patriotism and I believe that if we had lived with these old-timers they would not have considered themselves heroes but just doing what was necessary to safeguard the interests of their country because it was theirs.

Make no mistake, these old timers were right. Everything we have of a material nature in this country is subject to the laws of this country and the administrative procedures permitted by these laws. Our initiative can be destroyed and our property virtually confiscated by procedures which can be instituted.

Eternal vigilance is in fact the price of liberty. Let us be vigilant and if it takes us one or two nights a week let us feel that the time is well spent.

Let us constantly be concerned for the state of the Union.

Wounded Korean vets return home by plane. Great men are needed during these years of war and unsteady peace.

D B Steinman —the Engineer Who

Makes His Dreams Come True

The Recent Recipient of NSPE's Award Is the Type of Man Who Never Thinks of Failure

AT the annual meeting in Tulsa, June 5-7, Dr. David B. Steinman of New York City became the second man to receive the National Society of Professional Engineers' award for Distinguished Service to the engineering profession. Past President Herbert Hoover was the recipient of the first award. A dramatic story lies behind the honor.

For Dr. Steinman it was the culmination of a dream which began many years ago. The world's most famous bridge builder, hailed as a "Poet who writes in steel," Dr. Steinman has a habit of making dreams come true. The habit began when he was just a lad brought up in the blighted area of Brooklyn near the Brooklyn Bridge. Far from thinking himself an underprivileged youth, Steinman early resolved to make his mark in the world—by becoming an engineer and building bridges like the Brooklyn Bridge. As a young man he was fascinated by it, learning its stones and towers intimately.

Later, he was to write a book about the bridge and its builders, John and Washington Roebling. Still later, after he had become the engineer he dreamed of being, he was entrusted with modernizing the Brooklyn Bridge.

Steinman's father was a laborer and David was one of seven sons. The family lived in a three room tenement flat. He still recalls vividly how hard it was for all of them to raise the $12 monthly rent.

Spending money and money for the necessities of life came hard in Steinman's early life. "One of my brothers and I would go to Park Row with two pennies and buy three papers," he recalls. "When we sold them we would go back and buy six papers for four cents. We'd keep that up until we could bring home fifty cents or a dollar."

As a youngster, one of his greatest sources of inspiration and recreation was the Madison Settlement House. Steinman never forgot the help Madison House gave to him in the critical period of his youth. As a young man, he became one of the leaders of the house—helping poor people's children get a decent start in the world. As a man, Steinman became President of the House and Chairman of its Board of Trustees—the most distinguished alumnus the worthy old institution has ever had.

At the age of 13, Steinman was a student at the City College of New York, from which he later graduated with the B.A. degree. Later, with the aid of three scholarships, he earned the A.M., C.E., and Ph.D. degrees from Columbia. He helped pay his expenses at Columbia by teaching nights.

Leaving Columbia, Steinman became a professor at the University of Idaho, where for four years, he was the youngest professor of engineering in the entire United States.

Then came a bleak period in Steinman's life. He decided to get into the active practice of engineering, but with all his promise, he couldn't find a job in 1921 after three months of searching. Then a friend in New York City suggested that he become a consulting engineer and offered him desk space at $10 a month.

The recollection of his early struggles is still clear in Steinman's mind.

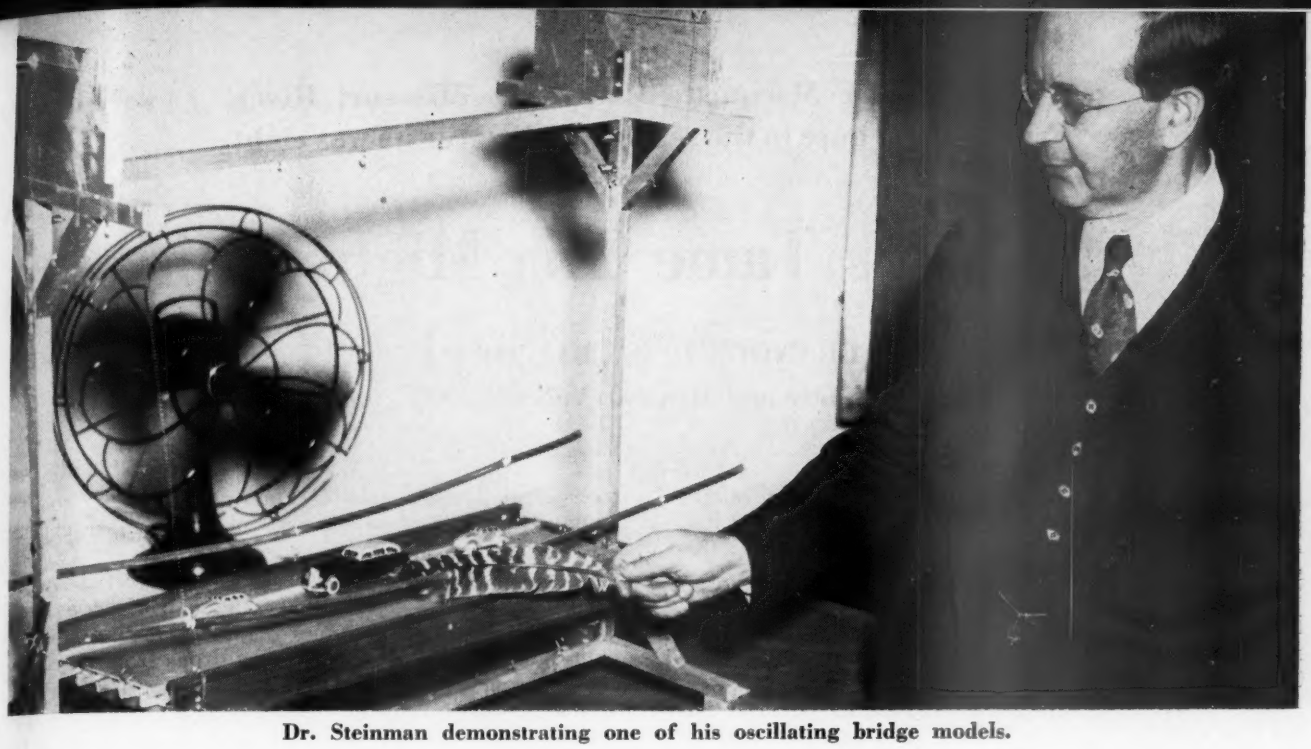
"My first fee was five dollars and for several months it was a difficult and discouraging struggle," he said. "Then, Holton D. Robinson, who built the Manhattan and Williamsburg bridges, asked me to join him in a competition to build the Florianapolis Bridge in Santa Catharina province in Brazil. We won the international competition and were engaged to build the bridge. It is the longest suspension bridge in the world and the largest bridge in South America. Mr. Robinson and I were partners for more than 20 years—until his death."

The Florianapolis Bridge was successful, to put it mildly. A revolutionary new design by Steinman created a sensation among top bridge designers of the world.

"I conceived a new form of suspension span, in which the middle half of the cable is utilized as the top chord of the stiffening truss. This gives a desired profile having maximum depth at the quarter points with greater economy and rigidity than conventional practice. This design, compared with the previous conventional design, was four times as rigid and required only two-thirds as much steel," Steinman said.

Dr. Steinman receives NSPE Award from President L. L. Dresser during Annual Meeting held in Tulsa.

THE Florianapolis Bridge immediately put Robinson and Steinman at the top of the heap insofar as bridge de-



Dr. Steinman demonstrating one of his oscillating bridge models.

signing firms were concerned. Triumph followed triumph in rapid succession. To name just a few there are the Henry Hudson Bridge, the Mount Hope Bridge, between Newport and Providence, Rhode Island—the largest bridge in New England; St. Johns Bridge in Portland, Oregon; the Thousand Islands International Bridge, the famous Sky Ride at the Chicago World's Fair; (which Steinman says is nothing more than a suspension bridge of novel design) and, of course, Dr. Steinman was given the assignment of modernizing the Brooklyn Bridge—a task which he considers the supreme accolade of his professional career.

One of the world's most interesting bridges, the Messina Straits Bridge, connecting the mainland of Italy with the Island of Sicily, will be erected under Steinman's direction and design. It is obvious to all that, in many areas, Dr. Steinman has achieved a new level of technical competence in the design and construction of bridges. He has built over 200 bridges on five continents.

One of Steinman's many dreams to come true materialized in 1936 when the Henry Hudson Bridge spanning Spuyten Duyvil, where the Harlem River meets the Hudson, was opened to traffic. Here's the way Dr. Steinman tells it:

"In 1908-9, my graduation thesis for the C. E. degree at Columbia University was *The Henry Hudson Memorial Bridge Designed as a Steel Arch*. Twenty-five years later it came to me as a real job for my firm. Same location and same type. A student's dream come true!"

Steinman brought with him a new concept into the building of bridges—to him building a bridge is not only creating a useful thing, it is also the opportunity to create a thing of beauty. He says:

"A bridge is more than a thing of steel and stone: it is the fulfillment of human dreams to link together distant places. A bridge is more than a problem in stresses and strains: it is a challenge and an opportunity to create the beautiful."

Steinman is a highly literate man. He has written a best-selling book, *The Builders of the Bridge*, (about the trials and tribulations of the Roeblings in building the Brooklyn Bridge). "It took more than five years of week ends and evenings to write it." He has also written more than a thousand articles in various publications.

But despite his many achievements, Dr. Steinman would probably have gone down in engineering history only as a master of bridge design were it not for his concept of the great possibilities of the engineering profession.

HE was one of the very first persons to appreciate the concept that engineering is a profession. The principles of registration of engineers and the adoption of professional standards and ethics to set engineering on a higher plane appealed to his fertile mind. One of the founders of the National Society of Professional Engineers, Dr. Steinman became NSPE's first President. He traveled at least 20,000 miles a year for many years to help organize the Society and spent many thousands of dollars of his own money in the effort.

"If I hadn't, I'd be a rich man today," he smiles wryly, but there's little doubt that he considers the time, money and effort he expended on professionalism well spent.

As David B. Steinman looks back over his career, he must gain a feeling of fulfillment at his many dreams which have come true. His youthful ambition to become an engineer; the many honors and the great recognition which has come to him for bridges; his successful book; his work with underprivileged youth; and most of all, his work on behalf of the engineering profession.

His first bridge. Built in 1912 over Potlatch River, Idaho, by Dr. Steinman and his Boy Scouts when he was Scoutmaster.

In 1673 Father Marquette Called the Missouri River, "Frightful." Those in the recent floods agree he was right.

NSPE Members Tame The Mighty Missouri

By BRANDON H. BACKLUND, P.E.
Consulting Engineer and Member Nebraska SPE, and NSPE

DURING the recent disastrous floods in the Missouri valley, members of the National Society of Professional Engineers took the lead in frustrating the power of the mighty river as it rolled on its relentless course.

At the first annual meeting of the Nebraska Society of Professional Engineers on May 17, three leaders of the successful fight against the flood waters at Omaha and Council Bluffs were honored.

Earl I. Myers of Kansas City, consulting engineer for the East Omaha Drainage District, and past-president of the Missouri Society of Professional Engineers, was Coordinator of "Operation High Water." Next in line was Edward T. Foster, National Director of the Nebraska Society of Professional Engineers, and president of Foster-Smetana Construction Company. Stanley A. Michael, president-elect of the Nebraska Society of Professional Engineers, acted as assistant to Foster, and split shifts with him. These three men were presented with certificates of merit.

Many other NSPE members and EIT's served in key positions and were part of the 50,000 men who gave their best efforts with little or no rest during the days of impending disaster.

The history of the "Big Muddy" is marked by periodic combinations of weather which have deluged and destroyed the basin and its inhabitants. The first known white men to see the Missouri were the Canadian explorers, Father Jacques Marquette and Louis Joliet. As they floated down the Mississippi in 1673, the Missouri was pouring its summertime rise into the Father of Waters. Father Marquette wrote in his journal:

"I have seen nothing more frightful. A mass of large trees—real floating islands. They came rushing so impetuously that we could not, without great danger, expose ourselves to pass across."

From its confluence with the Mississippi just above St. Louis, the Missouri meanders a distance of 2465 river miles to its origin, the union of three mountain streams near Three Forks, Montana. As it drops from an elevation at the source of four thousand feet to four hundred feet at St. Louis, it gains volume from the tributary systems that flow mostly from the west. It drains an area of 530,000 square miles, including all of Nebraska, parts of nine other states, and the Canadian provinces of Alberta and Saskatchewan.

A COMBINATION of heavy snowfall and erratic prairie climate was responsible for the record flood of April, 1952, surpassing the previous records of 1881 and 1943. Freezing and below normal temperatures up until the end of March held normal runoff back. A sudden rise to seventy degree temperatures throughout the upper watershed melted heavily packed and deep accumulations of snows. Continuing high temperatures fed increasing amounts of water into the river, melted from the snows underlain by ice which prevented normal percolation into the soil.

An estimated eight million acre feet above bank full stage was carried by the river. The four dams often suggested for construction on the main stream have been designed for a total retention capacity of 15,465,000 acre feet of water. Unfortunately, only the Fort Peck dam and reservoir has been completed, with a storage capacity of three and one-half million acre feet, which would otherwise have been added to the flood. The

Left. Dealing with a sewer back-up in a residential section. Right. Cutback levee 75% completed. This secondary levee was constructed when seepage through the main river levee became critical.

Engineers Led the Fight Against the Rising Waters . . .

Pictured above at the desk of the Flood Control Center, City Hall, Omaha, Nebraska, is Engineer Edward T. Foster, National Director of the Nebraska SPE. Foster and many other NSPE members took an active part during and after the disaster. Earl I. Myers, past president of the Missouri SPE, and Stanley A. Michael, president elect of the Nebraska SPE, were honored by the Nebraska SPE together with Foster for their outstanding service.

flood walls at Omaha and Council Bluffs are a part of the Pick-Sloan plan. It was only by superhuman effort that these protective works, designed for a maximum high water level of 26.5 feet, withstood the flood crest of 30.24 feet, Omaha river gauge height.

The phenomenon of the flood was of such grandeur that it was surpassed by only one thing. That was the revelation of the inspirational fight to save the communities. Men and women rallied to the emergency as no one had anticipated. Volunteers came not only from the threatened areas, but from neighboring communities in droves. Each call from the flood control center for help, whether for manpower, supplies, or equipment, was responded to fully, instantly. The event will live in the minds of the people for many years to come, not so much for its magnitude and destruction, but for man's recapture of faith in his fellows.

Left. Here a flood-fighter patrols a built-up and sandbagged levee near the crest water stage. This photo was taken on north side of Omaha airport.

Above. Here barges are being loaded with rock to be dumped along side levees.

MR. SHERIDAN

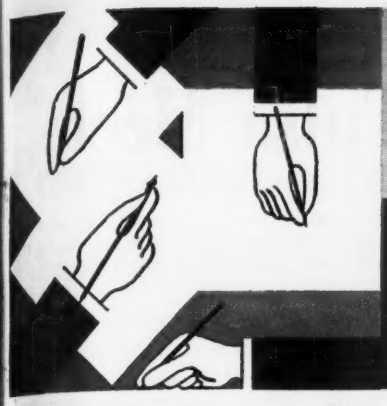
Arthur V. Sheridan, NSPE's Second President, Dies in New York City Auto Accident

ARTHUR V. SHERIDAN, second President of the National Society of Professional Engineers, who held office during 1937-38, met a tragic death June 19 when a car he was driving skidded and crashed into a truck. Mr. Sheridan's death came only two weeks before he was scheduled to retire as Commissioner of Borough Works of the Bronx in New York City.

Few persons contributed more to the cause of professional engineering or to the National Society of Professional Engineers than Mr. Sheridan. Born in New York City, he attended City College of New York, Columbia University, and the Sorbonne in Paris. He was an engineering professor at New York University and Manhattan College and lectured often on engineering history and philosophy. He was the author of three books: *Whither Engineering Education? Three Centuries in the Bronx,* and *Traffic in the Bronx.*

Mr. Sheridan was editor of THE AMERICAN ENGINEER for 15 years. He was a Past President of the New York Society, and of the Association of Engineers of New York. He was a member of the A.E.F. in World War I and during the second World War was a consultant to the Army in this country and abroad. He received commendations from two Presidents of the United States — Herbert Hoover and Franklin Roosevelt — for engineering work done for the United States.

Mr. Sheridan was appointed Bronx Commissioner of Borough Works in 1942. He is survived by a son, Arthur, Jr., 11, a brother and a sister. Mr. Sheridan was 64 at the time of his death.



Professional POSTSCRIPTS

This is your department. Your contributions to it are solicited. We want your views on subjects that affect the engineering profession directly or indirectly. Please keep your contributions short, and remember that editing may be necessary to conserve space. Your name may be omitted if you desire. — *The Editor.*

***Professional Postscripts* is a forum type feature that is open to all readers of the magazine. Engineers interested in their profession usually have much to say about subjects affecting the progress of engineering and the men in it. *Postscripts* is a good sounding board for all with something to say. And speaking of men with something to say, here's**

Professor Harold H. Munger, Kansas State College, Manhattan, Kansas.

He has written on "Concerning Engineers and Education," and here is his piece.

—PP—

A young man, just graduated from the School of Law, was being examined for admission to the Bar. He amazed everyone by his prompt and perfect answers to all questions. The examining Attorneys began throwing more and more difficult questions at him. Still he batted a home run at every pitch. Finally the venerable Judge who was presiding said, "Young man, I have just one more question to ask. You have made an extraordinary showing. I doubt if any of the Attorneys on this Board could have done as well. Certainly I could not! Now for my final question, and upon its answer depends whether or not you are admitted to the Bar. *How did you do it?*"

"Your Honor," answered the candidate, "it was really quite simple. I have an encyclopedic memory. I automatically retain a mental record of everything I read or hear. Sometimes I become terrified at the thought of the vast stores of information I carry in my mind, but for this examination it was most convenient. I simple memorized the statutes of this State and of the United States as well as the decisions of the Supreme Courts of this State and of the United States. With all this information instantly available, it was very easy. I simply reached back into the file, as you might say, and pulled out the answer to every question."

There was a long, long minute of silence, then the Judge spoke, slowly, thoughtfully, even timidly. "Not so good! Not so good! In view of the showing you have made, we cannot deny your petition. You will be duly admitted to the Bar, but I warn you, Sir, you are on *dangerous ground!* Some day Congress may *repeal every damned thing you know!* Why didn't they teach you to *do a little thinking?*"

Likewise the student of the Social (misnamed) Sciences memorizes an assortment of glib cliches and supposedly authoritative quotations. The Economist learns to repeat Gresham's Law, can talk about the "point of diminishing returns" and make brightly cynical remarks about the antediluvian day when the archaic capitalists believed in laissez-faire and the law of supply and demand, but has he been taught to think? The psychologist learns a jargon of words like, super-ego, id, libido, repression, fixation, compulsion, complex, behavior pattern, but does he know anything about *human nature?* The Literature major can reel off page after page of polished prose about Chaucer, Shakespeare, Milton, Keats, Shelley and the other immortals, but can he write a page that will leave the reader any wiser, any better informed than he was when he started reading?

The Engineer, if he is a *real* Engineer, must have something that is rare indeed among non-engineers. To quote Dean M. A. Durland, Kansas State College, "He is taught to have respect for *facts* and *figures.*" The Sociologist starts on a basis of wishful thinking and ends in a state of hysteria. The Artist starts in a state of rebellion and ends in total futility. The Psychologist starts with a hundred false assumptions and ends in a ludicrous denial of every existing fact. The Politician starts on a basis of opportunistic hyprocrisy and ends in shameless venality. But the Engineer starts with, "Get the facts!" Having collected the pertinent facts he sets them together in an orderly pattern and applies the cold, hard laws of nature and mathematics to the problem. His solution may not always be perfect, but at least it is founded upon *facts.* And that is why business and industry are finding Engineers so valuable in executive positions that we have an actual shortage of Engineers in the strictly Engineering field of employment. And the same reason may have more than a little to do with the fact (for it is a *fact*) that the political powers of our land are using every means within their reach to aggravate that shortage, such as conscripting thousands of trained Engineers into the Armed Services and putting them at such highly professional duties as K.P.

There are signs that Engineers are growing weary of being treated as errand boys for politicians and financiers. Hurrah! Some have even resigned highly salaried positions in industrial or governmental service rather than prostitute their professional honor. Hurrah again! May there be many more like them! Is it too much to hope that we may yet see the day when America, as a nation will demand, "*Get the facts!*"?

Reference is made to the May, 1952, PP, when an anonymous letter from an engineer in Texas was printed. Here is a comment on that piece from

Engineer Benjamin Bean, Independence, Missouri

—PP—

I am from Texas too, though born in Louisiana, and I am somewhat ashamed for my brother who feels so blue about engineers. He writes well. His observations concerning the abuses in the profession are correct in the main. But engineering is as natural to man as the building of nests to the birds. Nothing will ever stop it.

Just now I am an instructor in an Engineering College, a free enterprise type of private school. I find here men and boys who have chosen to prepare themselves for the engineering profession, in spite of all the things that may be wrong with the profession as it now stands. They are the uninitiated who will in time be growing members of the profession. I have spent most of my life since 1907 in the engineering field; and I am sure that it has not gone, and is not going, to the dogs.

It is my mature opinion that what holds some engineers down is not the fault of employers. Many engineers are the know-it-all type who cannot learn from those around them. Now that I have lived long enough to awaken to the possibilities of learning something, I know my future is assured. No man can gain security by high pay, bonuses, life insurance, hospitalization, etc. The only way for an engineer to gain security, real security, is to be humble enough to learn what he ought to learn about his work, do an honest days work, and prove to his employer that he is more than worth the money he is paid.

I know what I am talking about. Refusing to learn is the greatest handicap of all peoples. In this college job I find it the common handicap that pupils have. Once the prejudice against learning is broken down, our professions will prosper, our people will learn, and we will soon have a civilization that all men will rejoice in.

—PP—

Now about the shortage and Mr. Lowell, who wrote in March PP. Here is

Engineer John R. Quinzio, North Tonawanda, N. Y.

—PP—

Mr. Lowell had excellent comments regarding the so-called shortage of Engineers. Especially important was his statement "There were plenty of Engineers walking the streets as recently as March of 1950." All major industries in the Niagara Frontier were releasing Engineers from their staff at a rate all out of proportion to the reduction in sales. One top executive of one of the largest industries in Buffalo proudly boasted in an article in "Fortune" magazine that he reduced his engineering department 50% when sales fell off 15%.

The real shortage is not in qualified and competent Engineers, but in Engineers who will work for $300.00 per month. Most industries set an arbitrary rate for Engineers in their organization, hire them through the regular Personnel office in the same manner in which laborers and tradesmen are

(*Continued on page* 31)

Read This Full Discussion of Business Sessions . . .

Progressive Action Marks Tulsa Meet

NEARLY one thousand engineers and their ladies attended the recent Annual Meeting of the National Society of Professional Engineers held June 5, 6, and 7, in Tulsa, Oklahoma.

Important business sessions that included topics of interest to all professional engineers, was interspersed by an entertainment program that ran the gamut from a barbecue on President L. L. Dresser's ranch to banquets and Indian dancing.

The Society's Executive Committee met on Wednesday, June 4 to review the program to be followed, and general sessions with directors from all state Societies attending got under way on June 5. These sessions continued through Saturday morning. On Saturday afternoon, the Directors and Society members heard an inter-professional forum moderated by S. L. Stolte, Past President. The forum included John H. Halley, President of the Oklahoma Bar Association; L. C. McHenry, Past President of the Oklahoma State Medical Association; Byron F. Nolen, President of the Oklahoma Chapter American Institute of Architects; and Clark A. Dunn, Oklahoma National Director of NSPE.

Business sessions on Thursday, June 5 were recessed for a noon luncheon sponsored by the Tulsa Chamber of Commerce. An address on "Engineering in Air Power" was given by E. H. Heinemann, famous jet plane designer and Chief Engineer, Douglass Aircraft Company, Incorporated. That evening, a buffalo barbecue dinner was held at the Woolaroc Museum at Bartlesville.

On Friday evening the engineers and their guests enjoyed a buffet supper at the Tulsa Country Club and later original Indian stomp dances by local Indians.

The Saturday luncheon featured a speech by Major General Bruce C. Clarke who spoke on "The Engineer in Military Service." This was followed by the inter-professional forum.

The feature on Saturday evening was the annual banquet given in the Crystal Ballroom of the Mayo Hotel. The highlight of the program was the presentation of the NSPE award to the well known bridge engineer, Dr. D. B. Steinman. (*See page 14 for complete story.*) The presentation was followed by an address by Dr. Kenneth McFarland, of the General Motors Corporation.

Dresser Presides

President L. L. Dresser, wielding the gavel for the last time, presided over the regular business sessions of the Board of Directors. Dispensing with the regular pattern of reading all reports, Committee Chairmen led discussions and debate and actions by the Board followed. Presented below are abbreviated versions of the contents of the reports, necessary comments for clarification, and the official Board decisions.

Immediate Past President L. L. Dresser, left, passes President's Cup to new President John D. Coleman.

Objectives of Society

Report Highlights: Report by special committee . . . new look at NSPE aims and how to achieve them . . . are programs geared to meet these objectives . . . are we going too fast . . . or too slow . . . can we afford present programs . . . are objectives sound . . . recommend a continuing study.

Comments: Past President Sidney L. Stolte, Committee Chairman, issued report.

Board Actions: Moved and adopted that the Committee on Evaluation of Program and Objectives, with the addition of two members, continue its studies to a more complete report.

Dues

Report Highlights: Special report previously distributed (*See AE, April*, 1952) . . . overall financing of Society . . . sufficiency of funds to meet current programs . . . revenue from advertising . . . feasability of increasing dues.

Board Actions: Instructed the Constitution and By-Laws committee to present at the fall Board meeting a recommendation that the Constitution and Bylaws be amended to allow an increase in dues to $10.00. (*This action does not mean that dues have been increased. It does mean that the Board at the meeting will take some action regarding the recommendation.*)

Relations with Other Professions

Report Highlights: Exchange of speakers with other professions . . . progress on mutual efforts with architects . . . joint consideration of court case involving architect v. engineer controversy . . . inter-professional committee organization by state societies . . . comparison of ethical standards with other professions . . . recommendation that engineers establish committee for relations with government . . . reduce amount of professional service rendered by federal government . . . delineate field between architects and engineers.

Comments: Report was presented by Past Vice President Cherry Emerson.

Board Actions: Board asked the president to appoint a special committee, or designate an existing standing or special committee, on the Engineer in Government, to parallel and coordinate with a similar committee of the American Institute of Architects.

Public Relations

Report Highlights: Priority of groups to be reached through PR program . . . internal PR problems . . . material dissemination within Society . . . status of executive research surveys . . . good reception on first report from industry and press . . . "How To Improve The Utilization of Engineering Manpower" . . . questionnaire now circulating for second report . . . success of "Engineers' Week" . . . plans for next year's "Week" . . . PR through publicity, radio, TV . . . how to finance continued PR activity.

Comments: Report submitted by Chairman C. G. Roush with report on Engineers' Week given by sub-committee chairman W. E. Perry. Mr. Robert McDevitt, Pendray & Associates representative and the Society's PR consultants, outlined ideas for a 1953 PR program.

Board Action: Authorized the Executive Committee to develop, within budgetary limitations, means for continuing the public relations program, with retention of Pendray & Co., as consultants.

Unity of Profession

Report Highlights: Reaction of engineering societies to report of Exploratory Group . . . Should NSPE accept invitation to join EJC, if offered . . . participation in Centennial of Engineering.

Comments: Alex Van Praag, Jr., NSPE's representative to Group of Engineering Societies discussing unity, presented report. Noted actions on majority report issued last December (see AE, March, 1952), that have been made by several participating societies. Observation made that several societies representing thousands of engineers have not endorsed report. Stressed lack of

(*Continued on page 27*)

With Our Members . . .

450 Attend Convention

Pennsylvania Society Elects Ezra Nicholson President

More than 450 members registered for the Pennsylvania Society's 17th annual meeting at Pittsburgh recently and nearly a thousand attended the annual banquet in the largest conclave ever held by the Keystone State Society.

A round of tours, exhibits and speakers kept the group constantly on the go.

The election of State Society officers for 1952-53 found Ezra K. Nicholson, of Philadelphia Chapter, elected President. Harold A. Cook, Edward L. Dryer, Carl L. Kreidler, Donald C. Peters, and L. Foster Tierney, were elected Vice-Presidents. Walter E. Witte was elected Treasurer; Allan H. Kidder, Robert A. Blackburn, and J. Donald Carpenter, immediate Past Presidents, were elected National Directors.

One of the highlights of the meeting was a symposium on engineering which brought Michael Baker, Jr., William R. Taaffe, Associate Professor of Industrial Administration at Carnegie Institute of Technology, Henry A. Sawchuk, and Jackson Graham, Colonel, C.E. Chief, Military Personnel Division, Office of the Chief of Engineers, Washington, D. C., together to present their views on the classification and remuneration of engineers.

Mayor David Lawrence of Pittsburgh officially welcomed the visiting engineers. The U. S. Steel Company held an Open House and visitors toured its new skyscraper from the third sub-basement to fortieth floor.

The Exhibits Rooms afforded visitors an opportunity of visiting the scale model exhibits of the civic improvements they later inspected on scheduled tours. Point Park, Gateway Center, Greater Pittsburgh Airport, Penn Lincoln Parkway, Jones & Laughlin's new Open Hearth Plant and many others were shown in miniature.

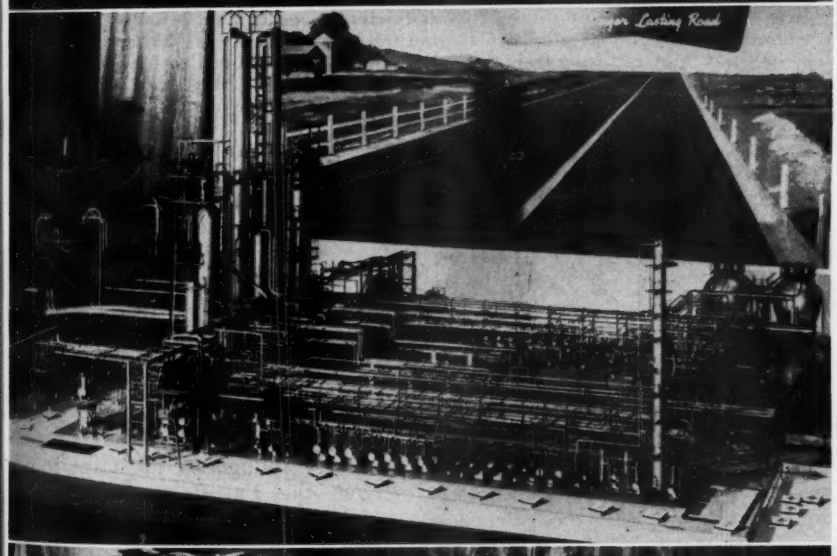
A Dinner Dance in honor of retiring President J. Donald Carpenter was held and National President L. L. Dresser was the principal speaker, his subject being, "The Professional Engineer's Responsibilities and Philosophies.

Dr. David J. Camilli was chairman of the State Convention committee. Mrs. Glen Comstock organized a Ladies' Auxiliary which rendered great service during the convention.

NEW PRESIDENT

Mr. Nicholson

PENNSYLVANIA EXHIBITS



These elaborate and costly models were a few of many exhibits shown at the Pennsylvania Society's annual meeting at Pittsburgh recently.

Held in Boston

Massachusetts Society Meets; C. T. Chave Elected President

Charles T. Chave of Wellesley, Assistant Chief Engineer of the Badger Process Division of Stone & Webster Engineering Corporation, was elected President of the Massachusetts Society of Professional Engineers for 1952-53 at the 7th annual dinner and meeting May 23 in the University Club, Boston.

Mr. Chave succeeds Roy E. Argersinger of Waban, Vice-President of Stone & Webster Engineering Corporation, as President of the organization's 1,000 Massachusetts engineers. Five sectional chapters sponsored the annual meeting. They are the Metropolitan Chapter of Greater Boston engineers; the North Shore, Central Massachusetts, Connecticut Valley and Berkshire groups.

Other state officers elected are: Clarence R. Westaway, Boston, Ingersoll-Rand Company, Boston, Vice-President; Fred A. Sawyer, Boston, Stone & Webster, Secretary; A. Richard Ungaro, Everett, Jackson and Moreland, Boston, Assistant Secretary; and Edward E. Lynch, Wakefield, Lynn General Electric, Treasurer.

New directors named are: Crawford M. Adams, Dalton, General Electric Pittsfield, State Director; Ernest L. Blair, Wollaston, Stone & Webster, 1st National Director; and Edwin R. Gardner, Swampscott, General Electric Lynn, 2nd National Director.

The Society's annual citation award was made by Mr. F. B. Headley to Dr. Karl B. McEachron, Manager of Transformer and Allied Products Division, General Electric Pittsfield, for his contribution to the field of engineering. Dr. McEachron, a member of the Massachusetts Board for the Registration of Professional Engineers, is particularly known for his achievements in the field of lightning and other high voltage phenomena.

General Raymond A. Wheeler, Engineering Advisor to the International Bank for Reconstruction and Development, was the principal speaker on "Engineering Work of the International Bank" at the dinner. Mr. L. L. Dresser of Tulsa, Oklahoma, President of the National Society of Professional Engineers, was the speaker at the luncheon meeting.

Arnie Solem Talks On Employment Outlook

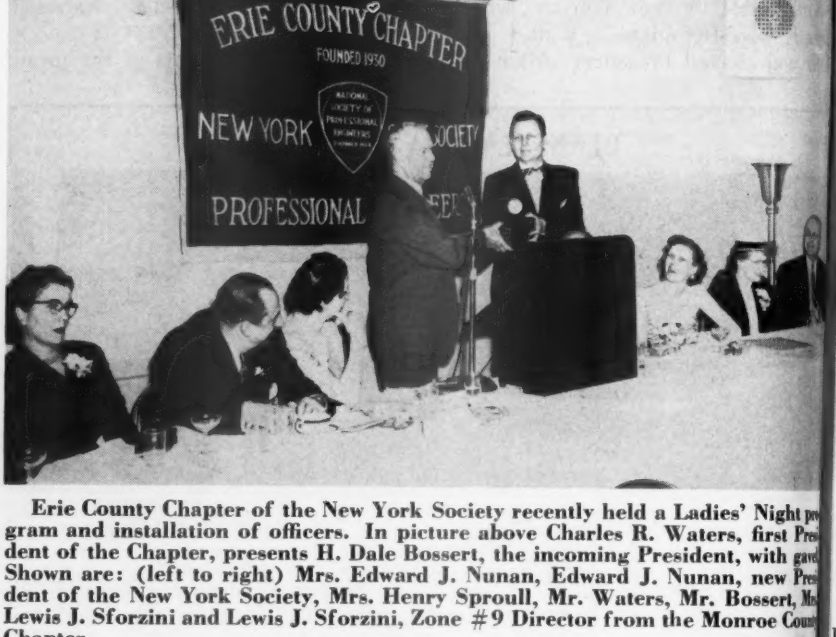
The Western Chapter of the Missouri Society heard Arnie Solem discuss "The Employment Outlook for the Engineering Profession," at a recent meeting.

Jacksonville Names Candidates For Chapter Office

The following have been nominated for office in the Jacksonville Chapter of the Florida Society:

President—John F. Shea and Russell P. Redman; Vice President—E. Ellis Bentley and Robert M. Garth; Secretary-Treasurer—Walter J. Parks, Jr., and Joseph B. Cox; State Director—Edward Van Wagenen and Fred H. Pumphery.

NEW OFFICERS



Erie County Chapter of the New York Society recently held a Ladies' Night program and installation of officers. In picture above Charles R. Waters, first President of the Chapter, presents H. Dale Bossert, the incoming President, with gavel. Shown are: (left to right) Mrs. Edward J. Nunan, Edward J. Nunan, new President of the New York Society, Mrs. Henry Sproull, Mr. Waters, Mr. Bossert, Mr. Lewis J. Sforzini and Lewis J. Sforzini, Zone #9 Director from the Monroe County Chapter.

C. T. Wise Heads New South Carolina Officers Installed

The South Carolina Society recently installed new officers as follows: President, C. T. Wise, Greenville; 1st Vice President, C. A. Farish, Columbia; 2d Vice President, H. E. Glenn, Clemson; Secretary-Treasurer, L. L. Paxson, Greenville; National Director, R. K. Rouse, Greenville, and State Director, L. C. Boone, Orangeburg.

A cocktail hour and banquet attended by members and their wives preceded the installation. President-elect Wise gave a short talk on the aims of the National Society of Professional Engineers. Harold S. Reeves of Charleston gave an interesting talk and demonstration of disappearing dialects and Negro spirituals in lower South Carolina. The meeting was held in Greenville.

Bergen County Chapter Visits Concrete Pipe Company

The Bergen County Chapter of the New Jersey Society met May 21st as guests of Mr. George Kerr and the Kerr Concrete Pipe Company in East Paterson. Two hundred and five engineers and guests including several from the Passaic and Westchester (NY) chapters were accorded the inimitable Kerr hospitality.

State presidential candidate Louis Frazza of Hawthorne was present and spoke briefly.

The main business of the evening was the sponsorship of the 1953 State Convention. It was decided by unanimous vote that Bergen would take this important job under the chairmanship of Col. Glenn S. Reeves of Hasbrouck Heights and the vice-chairmanship of Fred F. Hohnhold of Tenafly.

Crusading District Attorney Addresses East Bay Chapter

Charles O'Gara, former Assistant United States Attorney in San Francisco who exposed the scandals and corruption in the local office of the Bureau of Internal Revenue in that city, was the speaker for the East Bay Chapter at its May meeting. Mr. O'Gara, now in private practice, urged professional engineers to take an active role in public affairs.

Washington State Trustees Meet In Wenatchee

The quarterly meeting of the officers and Board of Trustees of the Washington State Society was recently held in Wenatchee, Washington. H. J. Reeves, State President, presided and various problems were discussed. Other officials present were: L. C. Campbell, Spokane; Lloyd N. Robinson, Seattle; Ora A. Dennis, Olympia; Howard A. Stingle, Spokane; L. R. Durkee, President, Seattle Chapter; W. S. Stockdale, Spokane; Phil F. Helmer, President, Wenatchee Chapter; Wallace W. Bergerson, President, Olympia Chapter; Ed Smith, Executive Secretary.

Roush Addresses Wichita Chapter

C. G. Roush, Chairman of NSPE's Public Relations Committee, spoke on the public relations programs of the National Society at a recent meeting of the Wichita Chapter of the Kansas Society.

Hula Dancing More Interesting Than Atomic Energy?

From *The New York Professional Engineer*, comes the following amusing note:

"It has been reported, but not confirmed, that one of the high officers of the Society was observed to sneak out of Thursday night's featured convention session on "Atomic Energy in Peace" to attend the ladies program on Hawaii and Hula dancing which was going on simultaneously. Moreover, it is further reported, but also not confirmed, that this high society officer subsequently was heard to comment glowingly that Hula compares most favorably with Uranium as a source of atomic energy."

Meets In Jackson

Michigan Society Gives Plaques To Schools; Calkins New President

The Michigan Society held its annual meeting recently in Jackson and decided to present a bronze plaque entitled *Faith of The Engineer* to all accredited engineering institutions in the State of Michigan. Wayne University in Detroit will be the first school to receive the plaque.

Funds for financing the project will be raised by contributions from members of the Michigan Society.

Officers elected in the meeting include Paul S. Calkins, President; Lester J. Richards, 1st Vice President; Dudley Newton, 2d Vice President; R. L. Wells, Secretary; C. K. Wirth, Treasurer; A. F. Plant, National Director; and Hugh E. Keeler, National Director.

NSPE President L. L. Dresser attended the convention and spoke on the relation of the professional engineer to the welfare of society. He urged engineers to participate actively in civic and public affairs.

At a dinner meeting, the convention paid honor to the memory of the late J. B. Foote of Jackson, a well-known Michigan engineer, who was one of the founders of the Consumers' Power Company. After G. F. Stecker of Jackson recounted Mr. Foote's achievements, a scroll was presented to his son, J. B. Foote, by President Dresser, who lauded the elder Foote's work.

Richard Carey of Lansing spoke on the subject "The Londoner's Story." The symposiums were held on Saturday. Burton P. Harrison of Detroit served as moderator of a discussion on "Effects of Material Shortages on Design," and J. G. Martin of Lansing, a District Engineer for the Portland Cement Company, led a round-table on "Legislation."

MICHIGAN OFFICERS

The 1951 officers and directors of the M.S.P.E. are shown with Lawrence L. Dresser, president of the N.S.P.E., at the Board of Directors meeting held in conjunction with the Annual Convention at Jackson. Seated from left are: J. H. Foote, director-at-large, of the Jackson Chapter; P. S. Calkins, first vice- president and president-elect, of the Detroit Chapter; A. F. Plant, retiring president and national director-elect, of the Detroit Chapter; and L. L. Dresser, president of N.S.P.E., of Tulsa, Oklahoma. Standing, from left, are: D. Newton, secretary and second vice-president-elect, of the Detroit Chapter; O. H. Hall, national director through 1953, of the Grand Valley Chapter; H. E. Keeler, retiring national director, of the Ann Arbor Chapter; and M. A. Lett, retiring director-at-large, of the Western Michigan Chapter.

LADIES IN THE NEWS

Officers of the Ladies' Auxiliary of the Grand Valley Chapter of the Michigan Society, (above) are Mrs. Wesley Bintz, Treasurer; Mrs. Kenneth Fishbeck, Secretary; Mrs. Carl Wirtz, President; Mrs. Scott Baker, Vice President; and Mrs. Otto Hall, representative to the National Advisory Committee.

New officers and the Board of Directors of the Auxiliary of the Arkansas Society are shown below. Seated are: Mrs. Allan Curry, Secretary, Mrs. William Fell, Chairman of the NSPE Ladies Advisory Committee, Tulsa, Oklahoma; Mrs. F. L. McDonald, President; Mrs. W. A. Bost, Treasurer. Standing: Mrs. Luther Bearden, Director, Mrs. R. J. Rhinehart, Vice President; Mrs. Fred Herring, Vice President; and Mrs. G. T. Kellogg, Director.

Milwaukee Chapter Holds "Funite"

The Milwaukee Chapter recently had a "funite" for themselves and their wives in connection with the Engineers' Society of Milwaukee.

Cleveland Chapter Holds Annual Family Basket Dinner

The Cleveland Chapter held its annual Family Basket Picnic recently. The outing included races, games and prizes for all members of the family as well as baseball, horseshoes and volleyball. A golf party is planned next month for engineers who play the game.

Professor Thompson Talks On Unity

J. Neils Thompson, Professor at the University of Texas, and Vice President of the Lone Star State Society, recently addressed the Galveston County Chapter on *Unification in the Engineering Profession.* Members of other engineering societies in the area such as AIEE and ASME were invited to attend.

Nevada Chapter Hears Naturalist

The Southern Chapter of the Nevada Society recently heard Mr. Russell K. Grater of the National Park Service give an illustrated talk with colored lantern slides on Mt. Rainier National Park.

Idaho Society Forms Magic Valley Chapter

The Idaho Society is founding a new chapter in Magic Valley. An initial meeting with a business session in the afternoon and an informal banquet in the evening was held recently. Rolla I. Long acted as temporary chairman. The following applications were made for membership:

William L. Lesher, Ray D. Armstrong, Lester E. Garlinghouse, Anthony W. Zornick, John A. Phelps, Arthur W. Schrank, Jacob D. Simona. For associate membership: Frederick Odell, Jasper McEwin, Fred Powers, Angus Walker, Clifford Bissell and Robert Lehman.

Midwestern Chapter Hears Carrier Official

Members of the Midwestern Chapter of the Pennsylvania Society recently heard a representative of the Carrier Corporation talk on *High Vacuum Low Temperature Concentration of Liquids.* The meeting was held at the Elwood City Country Club.

Texas Society Gives Charter To Student Chapter In Beaumont

Texas' first TSPE student chapter received its charter in Beaumont recently at the monthly meeting of the Sabine chapter.

The ceremony was held in the auditorium of the Anthony F. Lucas Engineering Building at Lamar Tech.

Wallace M. Driscoll, Jr., executive secretary of the TSPE, presented the charter to Don Cash, president of the Lamar Engineers club.

The club, some 100 members strong, became the student chapter under the charter from the TSPE.

Lamar's student chapter became what Texas Society officials believe to be the third such organization chartered by affiliates of the NSPE in the nation.

The other two are in Oklahoma, one at the University, and the other at Oklahoma A. and M.

The Lamar student chapter will be organized into sub groups, which will meet separately.

Formation of the student chapter was given approval by the state executive board at its meeting April 18.

The matter was placed before the membership of the TSPE in the form of a ballot on a constitutional amendment and approved.

Hartford Chapter Invites Non-Members To Methods Night

The Hartford Chapter of the Connecticut Society held its first "Methods" meeting featuring a talk by Lee L. Harding on *Town Lines and Town Line Surveys.* Non-member, registered engineers in the vicinity were special guests.

1,000 Expected

Northwest Engineers Centennial Held In Portland, Oregon, August 9

Professional engineers of Oregon, Washington and Idaho will converge on Portland, Oregon, at the Multnomah Hotel, August 9th for a one-day Northwest Engineers Centennial to commemorate a century of engineering progress in the "far corner" of the nation.

More than a thousand engineers from the three states will attend, according to W. C. Williams, president of Professional Engineers of Oregon, host to the visitors.

"We will review 100 years of engineering progress in the Northwest," Williams stated, "and then we will take a long look ahead into the next century."

The general theme of the important gathering will be a discussion of the engineering profession's civic and public responsibilities.

Some of the outstanding engineers in the nation will be on hand, Williams indicated.

Co-hosts with Williams, will be E. L. Mathes, Boise, president of the Society of Professional Engineers of Idaho, and H. Jack Reeves, Spokane, president of the Society of Professional Engineers of Washington.

This will be a gala occasion for the northwest engineering profession and the Portland meeting will be a preview of the Century of Engineering to be held in Chicago in September.

High on the program in regional significance is an indication of the engineers' awareness of social progress in relation to technical progress and their proposed efforts to reconcile the two for the benefit of all the people.

"It is fitting that the northwest should hold this great commemorative tribute to the engineers here in the region which has seen such fabulous development in the past two decades," said Oregon's Governor Douglas McKay.

NEWS ARKANSAS ENGINEER

The Arkansas Society recently held a certificate-presenting ceremony to newly-licensed professional engineers in the state. The newly registered engineers issued certificates at this meeting are left to right, front row: James H. Wiseman, Jr., R. H. Patterson, Richard H. Muehlenbrock, James E. McCurry, Eugene C. Spratt, Alice Joe, A. A. Edewaard, John E. Mahaffey, Harding L. Taylor, George Steward Daunis. Second Row: John Tallant, Arthur H. Thomas, Rohn F. Drye, Jr., George McAllaster Rozzell, John F. Danner, Jr., W. William Graham, Jr., Joe E. Coker, William M. Brawner, L. Lamar Armstrong.

Lubricating Engineer Traces History Of Oils For Marion Chapter

Clarence R. Jones of Newark, a lubricating engineer for the Pure Oil Company, was the guest speaker at a recent meeting of the Marion Chapter of the Ohio Society.

Jones, who once worked as an auto mechanic with Eddie Rickenbacker, told of early days of the automobile industry and its rapid development through the years from 1890 to the present.

Each new development in the manufacture of the automobile has required a new type of lubricant. Dust particles are the greatest enemy of moving mechanical parts, he said.

Young President Of Idaho Chapter

At the April meeting of the Twin Falls Chapter of the Idaho Society, the following were elected to office. Vincent T. Young, President; John A. Phelps, Vice President, and Harold L. Lackey, Secretary-Treasurer.

Dr. Vaughan Discusses Engineers In Management

Engineers In Top Management was the topic of Dr. Kenneth W. Vaughan, consulting psychologist, in a talk before the Dutchess County Chapter of the New York Society recently.

Mart Gives Talk On Communications

Leon Mart, President of the Marley Company, and holder of 25 patents, recently addressed the Western Chapter of the Missouri Society on *Communications Between Engineers and Management.*

Ethics In Engineering Topic At Monroe Chapter Meeting

Dr. Jess H. Davis, President of Stevens Institute of Technology, addressed the Monroe County Chapter of the New York Society on *Ethics and Practice of Engineering.* A dinner was held preceding the meeting which was co-sponsored also by the ASCE, ASME, AIEE and the American Institute of Chemical Engineers.

Michigan Director Addresses Cleveland's Certificate Fete

Donald Trefry, Director of the Michigan Society, spoke on "What Constitutes Success In Engineering," at the Certificate Presentation of the Cleveland Chapter at the Cleveland Engineering Society Auditorium recently. Robert Waid, Secretary of the Ohio Professional Engineer's Registration Board, presented certificates to successful candidates.

TEXAS ENGINEER RECEIVES CITATION

Engineer D. K. Caldwell (left) receives a citation from Marvin C. Nichols, immediate past president of the Texas Society of Professional Engineers for "distinguished service to his community, state and nation." Mr. Caldwell was largely responsible for the development of iron ore gravel roads throughout East Texas. The award was sponsored by the East Texas Chapter.

Governor Pays Visit To Southern Chapter Of Nevada Society

Governor Charles Russell of Nevada was the guest of honor at a meeting of the Southern Nevada Chapter held in Las Vegas recently. The Governor described some of the multiplicity of duties required of him by his office and of some of the many strange requests and demands made on the Governor by various individuals.

McLaughlin Heads Westchester County Chapter Nominees

New officers of the Westchester County Chapter of the New York Society are:

Richard M. McLauglin, President; Charles Ryan, Vice President; Max Vogel, 2d Vice President; Robert H. Cummings, Secretary; and Fred Martelon, Treasurer. Directors are: Fred Brandes, Anthony Brienza, Sherwood Tribou, Norman Odell, John J. Balint, Joseph A. Brady, Ebbert Pearson, Paul I. Brienza, Wilson Scott, and Chester A. Garfield.

Rev. R. B. Macdonald New Kings County Chapter President

The following officers have been installed by the Kings County Chapter:

President, Rev. Ronald B. Macdonald; First Vice President, John G. Noest; Second Vice President, Arthur A. Vioni; Secretary, Irving J. Lake; Treasurer, Paul Klepper.

"Sell Yourselves" Engineers Advised By Company Head

"Engineers must learn to sell themselves. No matter how good you are, it won't help you if people won't buy your product," advises President Charles R. Younts of the Plantation Pipe Lines Company.

Mr. Younts gave the advice in a speech to the Atlanta Chapter of the Georgia Society in a recent meeting. His engineering story is famous throughout Dixie. In August, 1941, Mr. Younts was engaged to construct a pipe line from Baton Rouge, La., to Charlotte, N. C., to be used by all major oil companies as a carrier. By January 1, 1942, the line was completed and pumping oil. Recent enlargement of facilities now allows a considerably increased capacity than was available during the war years.

Idaho Society Completes Salary, Fee Schedule

G. A. Riedesal, Chairman of the Professional Practices Committee of the Idaho Society, recently completed his two year task of preparing a *Recommended Minimum Salary and Fee Schedule* for Idaho professional engineers.

Dr. W. E. Folz, Agricultural Economist, from the University of Idaho, lectured on *Industrial Economic Development in Idaho.* State Secretary W. Purdy Eaton reported membership status and pointed out some needed changes in the Society's constitution. State President Ellis L. Mathes presided. The meeting was held in Moscow.

George Rogers Clark Chapter Awards 8 Cash Scholarships

The George Rogers Clark Chapter of the Indiana Society has awarded one $100 and seven $25 scholarships to outstanding young men in high schools in the surrounding area who plan to enter engineering colleges. Eight Honorable Mention certificates were also awarded other applicants.

Thirty-five of forty-nine high schools in the ten county area in South Central Indiana participated. Winners were selected on the basis of being "outstanding prospective engineering students." One candidate to compete for the title "Outstanding Prospective Engineering Student" was named by each high school.

The George Rogers Clark Area Award Winner ($100 scholarship) was Maurice Lorenz, Madison High School. Lorenz had a four year high school scholastic average of 96.8 and was active in athletics and student affairs. He plans to enter Purdue University's School of Chemical Engineering.

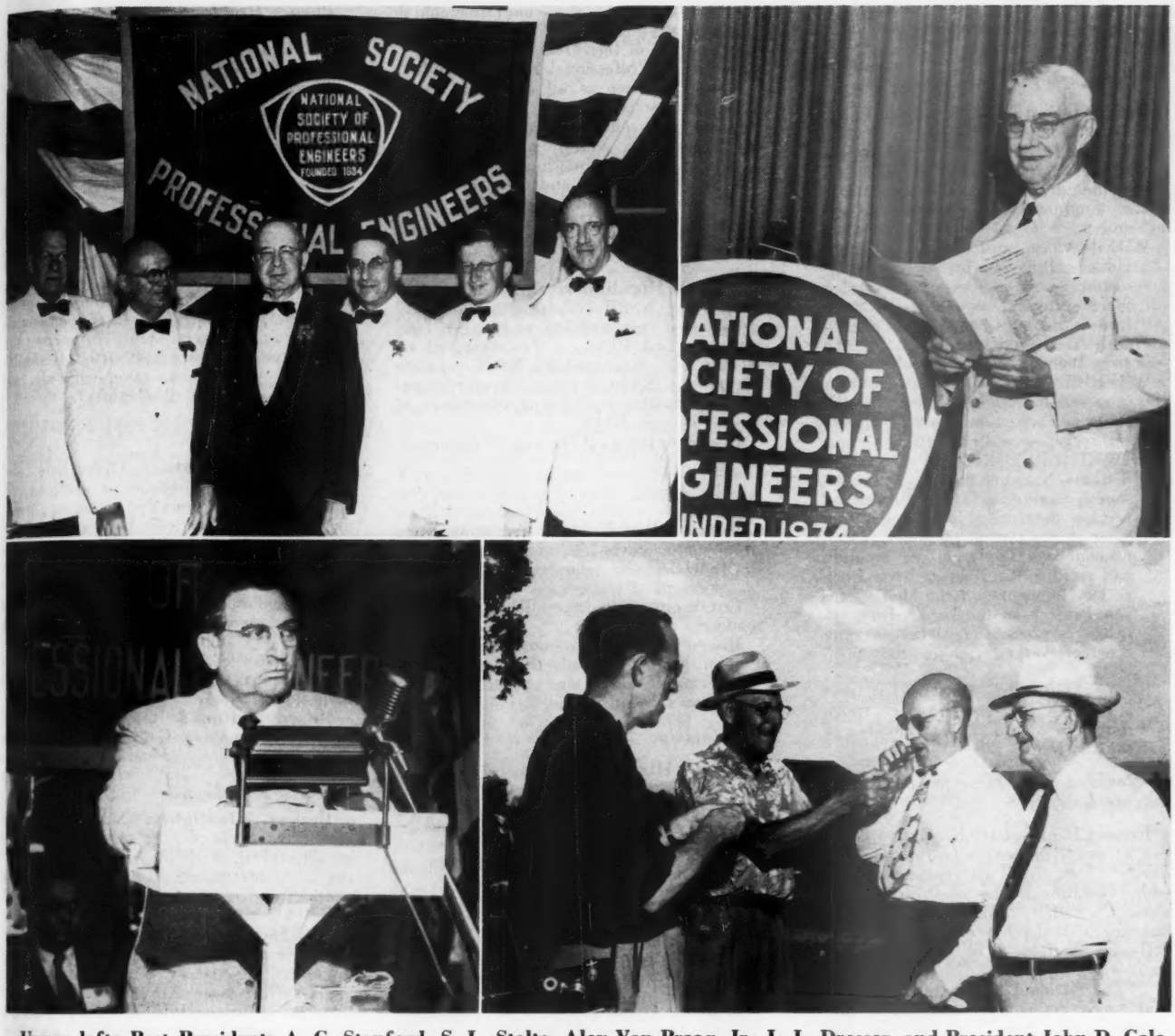
Stephen Sewell Chapter Formed In West Virginia

The Stephen Sewell Chapter, a new chapter of the West Virginia Society, was recently organized at Richwood. The following officers were elected and installed: J. W. Raine, president; A. L. McMillion, first vice-president; C. A. Quenon, second vice-president; Fred Wehle, Jr., secretary; John W. Moore, director.

A delegation from the Appalachian Chapter was present. C. C. Darrah, president of the Appalachian Chapter, was in charge of the organizational ceremonies. Talks were given by A. S. Cappellari and by Past State President Leslie C. Gates. State Secretary Ross B. Johnston was among the visitors.

John C. Riedel Given Testimonial Dinner By N. Y. Chapter

Professor John C. Riedel, Past President of NSPE, and Chief Engineer of the Board of Estimate of the City of New York, was honored by a special luncheon given by the Kings County Chapter of the New York Society in cooperation with the Cooper Union Alumni Association.



Upper left: Past Presidents A. G. Stanford, S. L. Stolte, Alex Van Praag, Jr., L. L. Dresser, and President John D. Coleman, assemble around Bridge Engineer and recipient of NSPE Award D. B. Steinman. Upper right: F. W. Chappel, Jr., looks over agenda. Lower left: Vice President C. G. Roush presides over business session. Lower right: President John D. Coleman, left, and Tunnel Engineer Ole Singstad (with cigar) enjoy Past President Dresser's ranch with two Oklahomans Dr. Baker and Senator Harper.

Progressive Action Marks Tulsa Meet

(*Continued from page* 20)

details on proposed organization and failure to provide essential provisions outlined in minority report.

Board Actions: The Board Expressed the opinion that NSPE could not accept an invitation to join an expanded EJC at this time because:

1. The degree to which NSPE's current activities in the social, economic, ethical, and governmental fields would be curtailed.
2. The failure to provide adequate financing.
3. The failure to provide authority for action.
4. The failure to provide for individual membership.
5. The failure to provide for coordinated action on the part of the engineering profession at the state and local levels.

Collective Bargaining

Report Highlights: Review of suggested revision of NSPE statement on collective bargaining . . . is policy correct . . . or wording too strong.

Comments: Report presented by R. A. Blackburn.

Board Actions: Referred Statement back to Committee for further study.

Salary and Fee Schedules

Report Highlights: Third major report . . . covers five grades of professional responsibility and three pre-professional grades . . . minimum for these grades not recommended on national basis . . . will vary according to local and other conditions.

Comments: Ole Singstad, Committee Chairman, issued report. He closed by pointing out that a booklet will be available this fall that will outline the minimum salaries and fees by states.

Legislation

Report Highlights: Reviewed the following legislation: *Armed Forces Reserve Legislation.* NSPE's efforts to incorporate provisions to insure proper treatment of professional engineers in the reserves.

Defense Production Act. Activity by NSPE to incorporate provision placing professional engineers in same status as doctors and lawyers regarding salary and wage control.

Individual Retirement Income. Legislative activity to provide amendment of tax laws to permit professional practitioners, not covered by Social Security, to equalize income over the years of practice.

Salaries of Federally-Employed Engineers. Recommends support of bill to survey classifications and rates of compensation for federal engineers . . . would be first step in attempt to increase salaries for federal engineers.

Comments: Report submitted by Chairman Clarence Shoch.

Board Action: Approved efforts of committee on various pieces of legislation. Also directed that NSPE support legislation authorizing and directing the Civil Service Commission to make a

study of classifications and rates of compensation for engineering positions in the federal government.

Development by Private Enterprise

Board Action: The Board adopted the following resolution:

WHEREAS, the National Society of Professional Engineers is dedicated to the advancement of the profession of Engineering in Public Service; and

WHEREAS, a profession is an individual calling in which a single person or group of persons are banded together to improve the public welfare as distinguished from an agency authorized and organized by the government to serve the public.

WHEREAS, many projects are now proposed for development which could be carried on either by private enterprise or government.

NOW THEREFORE, be it resolved that the National Society of Professional Engineers favors the use of private enterprise in the development of our natural resources guided by sound principles of conservation and point to the Niagara River Power Development and the Hell's Canyon Project on the Snake River as instances wherein legislation is being considered that violates this principle,

BE IT FURTHER RESOLVED, that a copy of this resolution be transmitted to each and every member of the Congress.

Employment Procedures for Engineers in Defense Industry

Report Highlights: Evaluation of practice of supplying engineers to defense industry . . . on a rate per person per day . . . while assuming no responsibility for their work . . . called "flesh peddling" . . . conferences with defense officials.

Board Action: The following Statement was adopted:

"The National Society of Professional Engineers is cognizant of the fact that various firms are entering into contracts merely to supply engineering employees without providing coordination of engineering services and without performing any of the functions or assuming any of the responsibilities usually performed and assumed by engineers supplying engineering services. Some of these are reputable and established firms and their practices are professional and ethical. However, some pesudo-engineering firms have been formed solely for the recruitment and placement of engineering personnel in industry. The National Society of Professional Engineers deplores and condemns this latter group and their unethical and unprofessional practices.

"In view of these facts, the National Society of Professional Engineers calls to the attention of all concerned the following statement:

"Any firm offering engineering services must, in conformance with the laws of the state in which it operates, have its operations and control under the direction and responsibility of registered professional engineers."

Land Surveyors

Report Highlights: Resolutions recommending NSPE endorse definitions and divisions of responsibility as between land surveyors and PE's . . . as approved by NCSBEE . . . recommend NSPE promote higher qualifications for surveyor registration . . . with view toward admittance to membership in NSPE.

Board Actions: Approved recommendations.

Registration

Report Highlights: Improving reciprocity procedures . . . suggested revisions to Model Law . . . standardization of state board examinations.

Comments: Chairman R. J. Rhinehart made the report.

Board Actions: Recommended that the Committee further study the matter of the "Eminence Clause" and report back to Board at subsequent date.

Membership

Report Highlights: Statistics on growth . . . review of program . . . ideas for next year's program . . . also new state societies —actual and potential . . . reports of situations in un-affiliated states.

Comments: Report submitted by Chairman H. G. Kennedy.

Board Actions: Requested that the waiver of dues for some members be studied further by the Committee.

National Defense

Report Highlights: *Navy.* National Defense Committee recommends action be pursued to amend Officer Personnel Act of 1947 to provide corrective action regarding professional engineers in Naval service . . . involving succession to command . . . requirement that professional engineers in naval service be properly assigned.

Air Force. Recommendation that action be continued to amend Air Force Organization Act of 1951 requiring proper assignment of professional engineers serving in Air Force.

Military Manpower. Review of activity and recommendation that Executive Director report to each Board Meeting on progress in carrying out policies adopted in Resolution #7-50.

Public Health Service. Recommendation that this service be named in NSPE Bylaw #16 (defining duties of National Defense Committee).

Civilian Defense. Progress report on cooperative activities in this field . . . Recommendations that cooperative efforts be continued and straigthened and that National Defense Committee develop suggested modifications in organization of Federal Civil Defense Administration.

Comments: Chairman Chester Lichtenberg presented report.

Board Actions: Authorized the support of a proposal of the AIA regarding certain appropriations in the civil defense program for prototypes and research in connection with air raid shelters. Also: Authorized the Committee to cooperate with a similar group of AIA in connection with air raid shelter studies and development.

Young Engineers

Report Highlights: Operations and status of volunteer counselor service . . . state society programs for young engineers and students . . . tie-in between engineer shortage and utilization of young engineers . . . recommend change in name from "engineer-in-training" to "junior member" . . . recommendations to implement volunteer counselor service and reaching high school students . . . student chapters in engineering colleges recommended.

Comments: Report presented by Chairman Robert Allen.

Board Actions: Rejected change in name from "engineer-in-training" to "junior member."

Ethics

Report Highlights: Status of eight committee projects . . . consultant's name on letterhead of client . . . free engineering . . . advertising . . . rules of ethical conduct . . . engineers' creed . . . roster of firms . . . enforcement of registration laws . . . competitive bidding . . . also engineer listing in telephone directories, negotiating engineering contracts . . . recommendation against free engineering . . . recommend adoption of fifteen rules of ethical conduct . . . recommend revised creed . . . maintain roster, but not for distribution . . . recommended procedure on negotiation of contracts.

Comments: Chairman and Past Vice President John F. Reynolds gave the report.

Board Actions: Approved policy statement on free engineering (revised); Rules of Ethical Conduct referred back to Committee for study; Approved Roster but not for distribution: Approved recommendation on Procedure for Negotiating Engineering Contracts; Approved action of referring back to Committee for further study the listings in Classified Sections of telephone books.

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NSPE Before Senate Group On Reserve Bill

STATEMENT of PAUL H. ROBBINS

Executive Director, N.S.P.E., *presented recently at the Senate Armed Services' Committee hearings on Bill H. R. 5426, dealing with the reserve components of the Armed Forces of the the United States.*

THE position of the professional engineer in national defense has been a subject of continuing study by our Society. The sole purpose of this continuing study is best described by the Society's approved and official statement of policy concerning the *Engineering Profession in National Security*. This statement reads in part: "The total welfare and security of the United States, and not the best interests of any group or individual is the basic consideration for all questions to be resolved. . . . The objective of the engineering profession in time of national stress must be the development of the means to provide a maximum contribution to the military strength of the nation, and the maximum production to support that strength."

From a background of this policy statement, and as a result of this continuing study, the Society's views on H. R. 5426, together with some suggested amendments to that bill, are herewith presented to the Committee.

It is a matter of general knowledge that we cannot hope to compete with our potential enemies on a mass manpower basis. Even assuming this to be possible, our national policy ever has been to depend on the knowledge, skill, and resourcefulness of our scientists, technologists, and engineers to the end that our manpower might be conserved to the greatest possible extent. Past experience conclusively demonstrates that not only is this a humanitarian policy, and hence in accord with our highest traditions, but also that such a policy is the best assurance of victory.

It becomes a matter of the utmost consequence, therefore, to assess what we have available in the way of scientific and engineering manpower, and to come to some firm policy decisions based on this assessment. The facts are these:

As a result of World War II's interruption of the normal education programs, the number of professionally qualified scientists, technologists, and engineers available for the country's needs became dangerously low in the years just following the war. While this condition has been somewhat alleviated by the larger graduating classes of recent years, the earlier loss has never been entirely made up, and there is today a definite and critical need for trained engineers. There is no reason to believe that this need can be met in the foreseeable future. On the other hand there is every reason to believe that it will become increasingly severe in the years just ahead of us.

Time is necessary for the development of a professional engineer; it is impossible, therefore, rapidly to increase the number of trained engineers available within a given time beyond the number already trained or in training. That number is fixed for the next four years, and cannot be materially altered.

The only practicable, or for that matter possible, solution to this difficult problem is to plan the most effective and the wisest use of the limited engineering manpower available to us. For our country's best interests, perhaps even for our country's survival, every trained scientist, technologist, and engineer must be used at his highest effectiveness and to his maximum capacity.

For this reason the place of the engineer in the reserve program should be examined very carefully, and every effort made to avoid misuse of this most essential manpower resource. The problem is far from academic: it is real and pressing. A recent membership survey of a number of major engineering societies will indicate the magnitude of the problem:

AMONG the younger men in the study, the proportion of reservists was very much higher than the over-all figure for society members of all ages. One out of every four respondents under 35 was in a reserve organization. In the small group under 30, the proportion of reservists was 37%.

These latter figures for the younger age groups outline the problem which would be created by a general call-up of reservists. As already noted, the engineering profession as a whole has no such concentration of personnel in the middle and older age groups as was found among the society members surveyed. The great numbers of men who have entered the field during the past decade are in most cases still under 35; many thousands are not as yet 30. Assuming that the proportion of reservists in these age groups is the same for the profession as a whole as for society members, their withdrawal would mean heavy losses from a profession vital to defense production, where there is already a serious shortage of personnel. With the passage of the Universal Military Training and Service Act the problem has become even more acute, and if in the future a National Security Training Corps is implemented, it becomes clear that virtually every young engineer would find himself in the reserve forces in some capacity. A major difficulty is that in most cases engineering training and skills will have been acquired subsequent to the time when some other military classification has been established. Past experience shows that these classifications are changed only with difficulty, and that generalized guiding legislation would be very useful in encouraging the armed forces to evaluate carefully abilities available to them at the time any recall became necessary.

Any future recall of reserves must take into account whether the nation's best interests are served by having men with these skills in uniform, or by having them work in a civilian capacity. Professional men capable of making a decided contribution to the supporting civilian defense economy surely would not involuntarily be recalled to active duty where their professional skills are not needed.

There can be, of course, no doubt of the Armed Services need for scientific and engineering manpower. This need goes far beyond the requirements of the obvious engineer assignments in construction and maintenance. There are a great many other positions vital to the operation of an army, navy, or air force where the professional services of a trained engineer are of the utmost importance.

Experience derived from the lessons of World War II, and more recent additional experience, however, shows that improvement might well be made in the adequate use of professional talent available to the Services. A basic reason for earlier difficulties in this regard was that proper preparation for such use was not made sufficiently far in advance. Qualified professional engineers were sometimes assigned to non-professional or routine duties, while at the same time professional responsibilities were thrust upon those not qualified to assume them. A recent survey indicates that approximately one-third of the professional engineering personnel serving in the Armed Services during World War II felt that insufficient use had been made of their professional abilities. While the evils of this situation have been to some extent mitigated, nonetheless recent instances have occurred where reserve engineers, performing an obvious service to the country's mobilization efforts as engineers, have been recalled to active duty for work in which their professional talents were clearly not used. Although such cases may be the exception rather than the rule, every effort must be made in this time of trained manpower shortage to avoid such conspicuous waste.

WE cannot afford to overlook the role of the engineer in industry and in the supporting defense economy. New weapons must be brought into production, essential construction designed and completed, the civilian economy must be redesigned not only to bring forth the present implements of defense, but oriented to foresee and plan for essential future production and research related to the defense effort. The

(Continued on next page)

Convocation of the Centennial of Engineering—September 3-13. Hotel Sherman, Chicago, Illinois. **NSPE Meeting**—September 5.

National Council of State Boards of Engineering Examiners—Annual Meeting. September 4, 5, 6. Antlers Hotel, Colorado Springs, Colorado.

Northwest Engineers' Centennial — August 9. Multnomah Hotel, Portland, Oregon.

Testimony

(*Continued from page 29*)

factories, plants, and research organizations devoting their primary efforts to military production must somehow have made available to them the best possible professional talent, and technical skill. Policies should be established whereby the relative advantage to the Armed Services of the call of professional personnel to active duty must be weighed against the relative disadvantages to the supporting civilian economy. Ample legislative safeguards should be provided in addition to any safeguards, plans, or directives initiated by the Defense Department and the Armed Services. These should provide for a careful evaluation of the relative engineering requirements of the supporting civilian defense economy and the Armed Services, with due regard for the comparative values of each. It is only at risk of ultimate disaster that we can continue to rob Peter to pay Paul.

In legislation governing the organization of the Army, (P.L. 581 of the 81st Congress), the Congress has already recognized the principle involved. In this law the Congress established the general policy according to which professional personnel should be used in the Army. It is suggested that a realistic consideration of the reserve problem would take into account a further development of the same principle by establishing three general policies for specialized personnel.

First, reservists with specialized scientific and engineering skills should not involuntarily be called to active duty unless the skilled services they can perform for the armed services are at least equal in value to those which they can perform for the civilian defense economy.

Second, reservists with specialized scientific and engineering skills serving with the armed services should, insofar as practicable, be used in professional work where their skills can be used to best advantage.

Third, when the armed services have a surplus of men with scientific and engineering skills, as demonstrated by the fact that suitable assignment for the use of these skills cannot be found within the armed services, men thus qualified shall be released to the supporting civilian economy as soon as feasible.

THE National Society of Professional Engineers therefore respectfully urges that the following, or similar, language be adopted in the bill under consideration; Add to Section 234 a new section (h) as follows:

(h) In the utilization of members of the reserve components possessing technical, scientific, or allied professional skills it shall be the policy to

(1) evaluate, prior to a call to active duty, the actual and potential contributions which such members of the reserve components are making, and can make, to the national defense in a civilian capacity as compared with the actual contributions which such persons could make if in the Armed Forces on active duty, or on active duty for training.

(2) place, insofar as possible, members of the reserve components on active duty who possess technical, scientific, or allied professional skills in assignments which require such technical, scientific, or allied professional skills.

(3) review periodically the Armed Forces utilization of members of the reserve components on active duty, who possess technical, scientific, or allied professional skills, and take appropriate action where the skills of such personnel are not being effectively used.

(4) release from active duty those members of the reserve components possessing technical, scientific, or allied professional skills necessary to, and needed by, the civilian economy in support of the national defense, when consistent with the requirements of the Armed Forces.

We are indebted to the Committee for this opportunity to present the views of the National Society of Professional Engineers. We wish once again to assure the Committee of our constant readiness to be of every possible assistance both now and in the future. Our sole wish is to see the best possible reserve legislation written in our country's best interests.

Letters

(*Continued from page 3*)

the top and 12" at the bottom will suffice.

Now, how do we know that such a wall will be adequate for all conditions? You guessed it. One has never failed! Again I submit that the reasoning is devastating, particularly for a material which has not proved itself. The one thing which disturbs me, however, is this: If concrete should eventually be proved unreliable, what will happen to all our concrete structures.

Can it be that such organizations as the American Concrete Institute and the Portland Cement Association have been kidding us all these years, leading us to believe that concrete members need to be "designed"; that concrete is a dependable building material. When I think of all the man-hours I've wasted on the analysis of structural frameworks, it makes me want to weep and wail and gnash my teeth. The time saved by designing in accordance with the advanced ideas of my esteemed informant might have meant the accumulation of considerable wealth. There certainly would have been more time for fishing. And that gives me an idea. If I am completely unnecessary, why not go fishing now? A placid lake or a rippling brook may erase the wrinkles from a troubled brow, and permit a tortured soul to dream of a spreading bough, a jug of wine, and a pretty "thou."

I. E. MORRIS, P.E.,
Atlanta, Ga.

Words . . .

Dear Editor:

One of the biggest assets a man can possess is the ability to express himself clearly, to have a good vocabulary and to use it correctly. Probably the most essential courses in the engineer's training are English, Composition, and Speech but, unfortunately, he usually fails to realize their importance. He considers them unnecessary. There is, however, opportunity for him to improve his English by constructive reading after getting out of school. The AMERICAN ENGINEER should be one source of good reading. In most respects it is well edited but the writer was somewhat surprised by the caption to the photograph at the bottom of page 7 of the June issue showing two American engineers who helped lick a water problem. It is likely that they licked the water, but solved the problem.

J. M. HARTMAN, P.E.,
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Postscripts

(*Continued from page* 19)

hired, put them through the same routine, and treat them merely as skilled labor. Still the policy makers who set up this procedure would never think of selecting a doctor, dentist or lawyer on the same basis. Apparently industrial leaders are unaware of the contribution that Engineers can and do make towards the growth and success of any company, and for this condition we can blame no one but ourselves.

There is another prevalent abuse in the policy of maintaining engineering staffs, most common in the larger companies. They will hire large groups of new graduates, keep them until they have developed enough experience and ability to warrant larger salaries and then release them. Then they will repeat this cycle as soon as more graduates are available. While this policy may result in an apparently low budget appropriation for engineering service, it cannot help but be expensive in the long run due to the extensive checking and revisions which must be made on drawings and designs. This experienced group will then make the rounds looking for a new connection at a salary commensurate with their ability. The answer will probably be the same in all places, "Yes we need men but your starting salary requirements are too high for the positions we have open." After this repeats a few times, our fellow Engineer comes to the conclusion that the engineering field is a poor place to stay and will look for a connection in a new field which gives better promise of treatment and financial returns. Little wonder that a high percentage of good men do not stay in engineering.

One of the natural outgrowths of the above abuses has been the increasing tendency to unionize engineering departments. While this tendency or action increases the security and financial returns, it stifles individual initiative and ability due to the lack of stimulation for advancement and improvement. The individual loses professional pride and becomes one of the herd. These moves are contrary to the aims of the Professional Engineers, but the increasing tendency to promote Professional Engineers into Administrative positions where they will participate in policy making may develop new ideas and help combat the evils which have developed and prevent new ones from arising.

In conclusion, let us take these stories of so-called shortages with a grain of salt, avoid efforts to jam thousands of students through Engineering Schools for the mere purpose of creating numerical pools of reserves, and realize that Engineers cannot be created by assembly line methods, but must enter the field to satisfy an inner desire to do Engineering work.

—PP—

The educators are very much with us this month, and now we have one who has written for PP before. His latest subject is "The Privileged Class," and he is F. T. Mavis, Professor and Head, Dept. of Civil Engineering, Carnegie Institute of Technology, Pittsburgh, Pa.

—PP—

"Do you want engineers to be a privileged class?" . . . Somehow this question comes up whenever the "service" of engineers is discussed. Let's clean it up as we should clean a dirty gun—let's *unload* it first.

What do you mean, *privileged* class?

Do you mean someone who is wealthy? "Wealthy" and "Poor" are relative terms. What "underprivileged" American today would be satisfied with the conveniences kings enjoyed two hundreds ago? Remember, wealthy men in those days traveled by stage coach and sailing vessel; crossed rivers by ferry boat; communicated by messenger or carrier pigeon; and those who *could* read, read by the light of fireplace or candle. Engineers, teamed with enterprising labor and management and resourceful men, have made available to every American today the speed and convenience of travel by train, automobile, and airplane; of communication by mail, telephone, and radio; of daily papers and lasting books that everyone can read by electric light . . . They have placed at our fingertips a power more fabulous than Aladdin could have dreamed up! Yes, engineers are "wealthy" in that they share in the real wealth they have helped to convert from the vast sources of Power in Nature for the use and convenience of man. No small part of their compensation is in knowing that largely because of them there are new industries—and more jobs, less backbending and shorter hours than ever before.

By privileged class do you mean someone who is influential because he has family, friends, following . . .? Independence, freedom, and *equality of opportunity* are in the cornerstone of the United States. Your reputation and mine is made or broken by the way each of us lives his life, and nobody else can earn that reputation for us. We influence one another by the way we use our opportunities to *do* something constructive today—and by the way we *plan* for what follows.

Do you mean a man for whom everything is easy? Each of us can become skilled in doing something useful if we keep our capacity, our goal, and our gumption balanced. Then our opportunities are unlimited and we are all privileged. If we aren't as successful as we'd like to be let's examine ourselves and look about us. Chances are we can do something *more*, or something *better*, or something *else*—or we can help ourselves by helping someone else. A prudent bantam-weight doesn't try to lick the world's heavyweight champion, but he spars with other fighters in his own class to keep in trim—and he can find plenty to crow about. There is opportunity and privilege in every class.

Do you mean the physically fit? Good physique may help but it is not essential. Few physical disabilities can't be compensated by the will to overcome them. The sane but twisted mind, like the sound but twisted body, can be corrected by exercise and education if the handicapped person has the will to exercise and learn. But nobody would seriously suggest severing brain from body and replacing it with a substitute "because nobody should be privileged to avoid substitutes in critical times!"

Do you mean engineers are a privileged class because they are college graduates—or because they are in college? Out of every two hundred persons over twenty years old about twenty-five went to college, ten graduated, and less than one in 200 is an engineer. Look at that engineer in college: It's certain he *works*, for mathematics, physics, chemistry, English, economics . . . (stuff each student must master before he scratches the surface in learning to become an engineer) demand strong minds and hard work. Chances are he earns part or all of his expenses—and if he is able and deserving, chances are he has a scholarship while he maintains his good record.

Three men are in college today for every one in his father's day—and ten for every one in his grandfather's day. If the pace of learning is getting faster and rougher there are also more opportunities for the able and enterprising student in engineering to get an education and to return to this country a vast increase in service for that investment in training. An engineering degree that is worth having does not come easy. To earn the privileges that go with it each man must build a stable and tough mind-structure on a solid foundation of science and the useful arts.

What, then, is the *privileged* class? It is you and I who live in these United States! We have that privilege because we immigrated here ourselves or because we had the good fortune to be born of American stock who earned that privilege for us. We have the privilege of serving at the highest level of which we are capable; we have the *obligation* to serve the best we can at that level; and we must *free the opportunity* to do so.

Today engineers and scientists are needed in production, in transportation, in management, in education and research . . . They are needed in responsible planning and leadership here and overseas. To throttle creative work . . . to transfer engineers from training, production, and supply lines to non-engineering jobs . . . to assign them to duty that does not fully use their capacity in planning and leadership in and out of uniform . . . is to waste our strategic "secret weapon" — mind-power within man-power. To scatter it, to use it unwisely, to hoard it, to assign it in response to emotional pressure . . . is to handle a loaded gun carelessly. Sampson was seduced, blinded, stripped of his power, and reduced to slavery by emotional pressure and smooth words—and his secret weapon was shorn from him while he slept. Let's protect Uncle Sam from the same course today.

"Do you want engineers to be a privileged class?" . . . They are—and they are capable and responsible and loyal to the obligations that go with privilege.

—PP—

Be back here next month when the *American Engineer* presents another Professional Postscripts feature with a variety of items about things professional engineers want to know about.

—The Editors.

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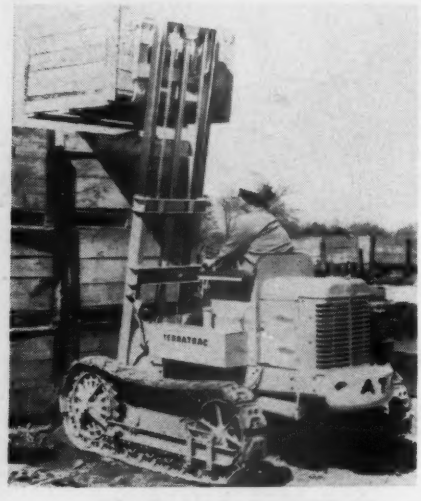
What's New

As a service to our readers, this column will describe briefly new product developments of general interest to professional engineers. For furthr information concerning these products, we will appreciate your filling in the coupon provided for this purpose, and mailing it to the American Engineer.

● **The development of a new crawler fork-lift, called the "terra-lift," has been announced.**

The new unit is designed to meet industry's need for a fork-lift that can work both indoors and outdoors on all types of terrain. The "terra-lift" can operate outside in all kinds of weather and in mud up to six inches deep. At the same time, when equipped with rubber track shoes, it can work inside warehouses and factories. The company states it is the only one of its type on the market.



The "terra-lift" can be used wherever lifting is required and has an excellent application for the armed forces for use overseas where it is expected to save immense sums by permitting the storage and handling of supplies on unfinished surfaces.

Commercially, the new unit is particularly adapted to such diversified operations as foundries, steel mills, scrap yards, paper and textile mills, industrial plants, orchards, lumber and construction companies, and in all kinds of freight loading. It will cost no more than ordinary wheeled fork-lifts.

In addition to its uses as a fork-lift, this unit can be quickly converted, by means of easily mounted attachments, for use as a bulldozer, angle dozer, loader, snow plow and for various other applications for which most other fork-lifts cannot be used.

The "terra-lift" is available in 2,000, 4,000 and 6,000 pound capacities, designated respectively the M-2, M-4 and M-6. Three sizes of lift are also being manufactured: 6 ft., 8 ft. 7in., and 12 ft.

Item 1.

● **"The Surveyor's Notebook," a collection of short articles on unusual surveying problems and their solutions, has been published by W. & L. E. Curley, Troy, N. Y., 107-year-old manufacturer of engineering instruments.**

Relating actual field problems and how they were solved by the ingenuity of the surveyor or engineer, with the aid of his instruments, the stories and surveying tips are told in the surveyor's own words.

The first page in "The Surveyor's Notebook" tells how one surveyor helped lay an oil pipeline in record time by using a few "tricks of the trade." In another, a county surveyor from Nebraska gives his method for quickly determining a quarter-section line when it is completely blocked by railroad cars.

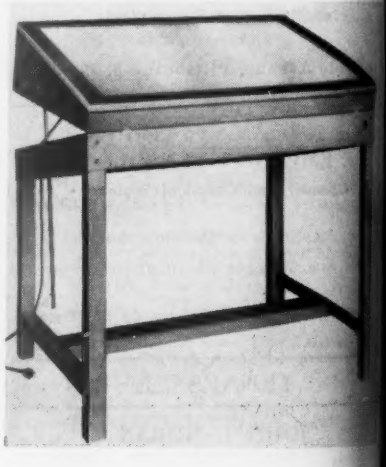
Among the surveying tips are a remedy for "frozen" tripods and a method for leveling over ten feet of corn. Unusual stories in the collection include the problems of surveying in the Arctic; unique transit practices of the Corps of Engineers in obtaining the first accurate survey of the Niagara River bed; use of transits and levels inside an aircraft plant; and how transits measured movement of a bell tower.

Item 2.

● **Hydrocide Colorcoat, a new paint, primes, seals and finishes highly porous masonry surfaces in one application. Colorcoat's specially formulated oil base paint and aggregate hides, fills in cracks and chips on old buildings or prevents them in new buildings. It is applied by brush or spray. Six lime proof colors. One coat does the job of three!** ***Item 3.***

● **Improved scientific design is the outstanding feature in this new 4-post tracing table.**

The scientifically designed fluorescent reflector has a smooth glass working surface with a sand-blasted underside for diffused lighting. Details show up clearly even on old blue prints. The reflector is cool and carefully engi-



neered to prevent eye strain. Two adjusting devices raise or lower the tracing surface to a comfortable working angle.

The tracing table is finished in hard baked hammertone grey enamel with an extra long electric cord. It is equipped with underwriters listed electrical parts. Tracing surfaces in two sizes are available: 20 in. x 25 in. and 24 in. x 36 in. with two 20-watt and two 30-watt fluorescent lamps, respectively. Portable tracing units in all sizes are also available.

Item 4.

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